

33, TOTHILL STREET, WESTMINSTER, LONDON, S.W.1.

Telephone : WHIttehall 9233 (12 lines). Telegrams : "Trazette Parl, London"

#### BRANCH OFFICES

GLASGOW: 87, Union Street . . . . . Central 4646  
 NEWCASTLE-ON-TYNE: 21, Mosley Street . . . . . Newcastle-on-Tyne 22239  
 MANCHESTER: Century House, St. Peter's Square . . . . . Central 3101  
 BIRMINGHAM: 90, Hagley Road, Edgbaston . . . . . Edgbaston 2466  
 LEEDS: 70 Albion Street . . . . . Leeds 27174  
 BRISTOL: 8, Upper Berkeley Place, Clifton . . . . . Bristol 21930

Annually £4 10s. by post.

Single copies, Two shillings.

Registered at the G.P.O. as a newspaper. Entered as second-class matter in U.S.A.

Editor : B. W. C. Cooke, Assoc. Inst. T.

Vol. 101] FRIDAY, SEPTEMBER 24, 1954 [No. 13

## CONTENTS

	PAGE
Editorial Notes . . . . .	337
Overseas Railway Development . . . . .	339
A Rational Approach to Dieselisation . . . . .	340
Proposed Works in East Africa . . . . .	340
Winter Timetables, Eastern, North Eastern and Scottish Regions . . . . .	341
Letters to the Editor . . . . .	342
The Scrap Heap . . . . .	343
Overseas Railway Affairs . . . . .	344
British Railways Freight Locomotive Tests—I . . . . .	346
Wagon Handling by Remote Control . . . . .	349
New Orleans Improvement Works . . . . .	351
New Rolling Stock for East Africa . . . . .	353
Prototype Bus for London Transport . . . . .	354
Personal . . . . .	355
News Articles . . . . .	357

## INDEX

An index to the one hundredth volume of "The Railway Gazette" covering the issues from January 1 to June 25, 1954, has been prepared, and is now available free of charge on application to the publisher.

## Railway Wage Negotiations

THE rejection by the Associated Society of Locomotive Engineers & Firemen of the latest offer of the British Transport Commission, which was agreed last Friday by the other two unions, has thrown the negotiations for a new railway wage structure into confusion once more. The resumption of direct talks depended entirely on the attitude of the A.S.L.E.F., which considers the new proposals to be inadequate as far as its members are concerned. The union has reaffirmed its previous decision to submit its case to the next stage of the negotiating machinery, the Railway Staff National Council. The normal outcome of such a submission would be arbitration by the Railway Staff National Tribunal under the independent chairmanship of Sir John Forster, Q.C. The situation is complicated by the fact that the Transport Salaried Staffs' Association and the National Union of Railwaymen are also represented on the Railway Staff National Council. As the A.S.L.E.F. has said that it sees no point in holding a

joint meeting with the other two unions at this stage to attempt to reach a common policy in advance, the support of these unions at the deliberations of the Council is, at least, problematical. Doubts have been expressed on the constitutional propriety of a reference to the Railway Staff National Council by one union alone, and this procedural point may have to be settled, probably by the Chairman of the Railway Staff National Tribunal, before the Council can meet. The T.S.S.A. has agreed on the terms of an interim settlement with the Commission, and the N.U.R. has agreed on minimum and maximum rates of pay and has commenced discussions with the Commission on intermediate rates. Whether the Commission can make a separate agreement with these unions, leaving the A.S.L.E.F. negotiations to follow their own course, is doubtful, but whatever the outcome, the patient work of Sir Brian Robertson, Chairman of the Commission, has done much towards clearing the ground for a workable agreement.

## International Internal Combustion Engine Congress

AN advance in the international exchange of information on internal combustion engines, including diesel engines for rail traction, is announced with the formation of a British National Committee which will send official delegates to future meetings of the International Internal Combustion Engine Congress. The British committee will consist of representatives from the British Internal Combustion Engine Manufacturers' Association, the British Internal Combustion Engine Research Association, the National Association of Marine Enginebuilders, the National Forgemasters' Association, the Locomotive Manufacturers' Association, and the Diesel Engine Users' Association. It will have the power to co-opt representatives of other bodies up to a total of 12 members. Support for British participation in the Congress has already been given by 23 firms and associations, and no doubt other bodies will give assistance now that the project has taken a concrete form. The next session of the Congress is to be held at The Hague in May, 1955, and is to concern itself with the use of diesel engines for rail traction and large diesel engines for stationary and marine use. Diesel traction in this country is thus likely to receive an immediate benefit from this new international development.

## Equipment for Southend Electric Trains

ANOTHER step towards the extension of Eastern Region electric services to Chelmsford and Southend has been taken by the placing of an order with the General Electric Co. Ltd. for 1,500-V. d.c. traction equipments for 32 four-coach sets. It will be seen from our report of the contract on another page that the end vehicles of each unit will be driving trailers, the motor coach having no driving compartments. The unusual formation adopted, which has not been used before on British Railways, will mean that in a unit operating by itself not more than two coaches will be propelled in either direction of running. Also, in any combination of four-coach units the end vehicles will be non-motored. The avoidance of leading motor bogies is sometimes considered to reduce wear and tear of track. On the other hand there is a widespread preference for a motor bogie at each end in the interests of steady running. These controversial points may be brought nearer to settlement when comparisons can be made between the riding of the new stock and that of the three-coach sets already operating on the Liverpool-Street-Shenfield section. The electrical equipment of the new trains will be generally similar to that supplied by the G.E.C. for the Manchester-Glossop stock, which has the same three-coach make-up as the Shenfield trains.

## A New Bridge over the Ganges

TENDERS for a mile-long rail-and-road bridge across the Ganges at Mokameh, near Patna in Bihar, were called last December, and a contract, valued at £3,500,000, of which particulars are given in our Contracts & Tenders columns, has now been let to the Ganga Bridge Con-

struction Co. Ltd., a company controlled jointly by the Braithwaite, Burn & Jessop Construction Co. Ltd. (one of whose constituents is an associate of Braithwaite & Co. Engineers Ltd.), and the Hindustan Construction Co. Ltd. It seems that the bridge will conform more to the second of two tentative designs detailed in our December 4, 1953, issue. Its 13 spans of 400 ft., for which Britain will supply much of the steelwork, will rest on concrete piers sunk to 150 ft. below the river bed to resist heavy scour. The bridge will be designed to be proof against earthquakes. The replacement of the existing wagon ferry by the bridge will not end transshipment of goods at this point to and from broad-gauge (Eastern Railway) and metre-gauge (North Eastern Railway) wagons; transfer will take place on the left bank, served by the metre-gauge lines, instead of the right bank as now. Nevertheless, it will enable a much increased tonnage to be handled, and that more expeditiously, at this important crossing.

### A Modernised New Orleans

THE city of New Orleans, served by eight railways, until recently had within its boundaries no fewer than 144 level-crossings, there being no under- or over-bridges. The authorities, however, are now spending over £20,000,000 to rectify matters. Towards this sum the railways are contributing, in one form or another, some £9,000,000 and have built a fine new union station, which, with its approaches and extensive ancillary works, accounts for nearly £8,000,000. Their 15 per cent share of the level crossing eliminations involves a further £1½ million. The station and other facilities are described elsewhere in this issue. The new roadway works are certainly ambitious and involve wide overhead highways up to half-a-mile long, carried mainly on steel and concrete viaducts, as well as imposing underbridges and a fine express parkway constructed over a covered-in canal.

### Promotion of African Railwaymen

CRITICISM that little is being done to carry out the East African Railways' policy of promoting Africans to responsible positions has been answered by Mr. A. F. Kirby, General Manager, East African Railways & Harbours. Mr. Kirby said he did not care if it was a European, an Asian or an African who was appointed to fill a vacancy, but he did care that it should be filled by a man who had the necessary qualifications to perform the duties efficiently, and these included many besides the academic. He looked to Africans to accept a much greater responsibility for running the railways. Africans had a long way to go before large numbers of them acquired the educational background to qualify them for direct entry into the higher posts of the organisation, but Mr. Kirby would do his best to see that if they could not get the necessary education outside the Administration, they would get it inside. The Training School at Nairobi was an earnest of his endeavour in this direction and its facilities would be extended. There was no reason why, in the future, an African starting in the bottom ranks of the railways, should not advance to the top of the organisation, but inevitably there had to be large numbers of staff to carry out the routine tasks. The General Manager was speaking at the Fifth Annual Conference of the Railway African Union, which was attended by 34 delegates.

### Longmoor Revisited

THE members of the Permanent Way Institution and of certain other organisations concerned with railways, who were the privileged guests of the Transportation Centre, Royal Engineers, at Longmoor last Saturday, saw not only the ways in which Transportation and Movements units of the Royal Engineers are trained, but also the extent to which the army is adapting technical developments to conditions peculiar to military railways. They were shown a semi-mechanical method of tracklaying, largely an attempt at solving the manpower problem whilst expediting railway construction in a theatre of war, besides an adapta-

tion of colour light to military railway signalling, a new form of bridging, and many other features of railway operating and structural and mechanical engineering. One remarkable feature is the extent to which men of the R.E.s are trained as diesel drivers and in maintenance of diesel locomotives, for there is no knowing on what railways—much more dieselised, perhaps, than those of this country—military exigencies may take railway Sappers. The variety and interest of activities in the training at Longmoor should induce many younger railwaymen and men in allied occupations to join the Army Emergency Reserve, which continues as an intimate bond between the Royal Engineers and the railways.

### German Concrete Sleepers on British Railways

A CONCRETE railway sleeper of German design, which is to undergo tests on British Railways, is reinforced by two steel bars passing through the concrete which have been tensioned by screw action after the concrete has hardened. This is in contrast to the method of manufacturing the reinforced concrete sleeper already in service on British Railways, which contains a number of steel wires, embedded in the concrete, on which the required tension is imposed before the sleeper is moulded. Several of the new sleepers are to be installed for experimental purposes on a section of track used by freight traffic. In addition, a few will be subjected to intensive laboratory tests at the British Railways research establishment at Derby. At least 18 months to two years must elapse before it will be possible for the results of the experiments to be assessed.

### Long Rails

IN Great Britain, where the L.N.W.R. more than 50 years ago was the first in the world to produce 60-ft. rails at its Crewe rolling mill and thenceforward to lay them as standard, 60 ft. still remains the standard length, whereas on the mainland of Europe 30 m. (98 ft. 5 in.) rails are in common use on main lines in Germany, Switzerland, and other countries. It is largely a matter of rolling mill layout; the principal German mills are able to handle rails of this length without great difficulty, and the advantage to the track of the reduction in the number of rail-joints is plain. The same result can be attained by welding, but in any event a rail without a joint is preferable to a welded joint, and the extra charged by the mill for supplying the longer length is probably less than the cost of the weld. Two mills in Great Britain have produced 120-ft. rails, which were laid experimentally in both the L.N.E.R. and L.M.S.R. main lines, while the L.N.E.R. before the war laid a considerable tonnage of 90-ft. rails, but apart from welding there appears at present no disposition to go beyond 60 ft. in this country. Even this is a considerable advance on U.S.A. practice, where the layout of the steel mills still compels the railways to use 39-ft. rails as standard unless resort be had to welding.

### Malaria Control on Indian Railways

THE inefficiency and loss caused by malaria among Indian railwaymen and their families, besides humanitarian considerations, resulted a good many years ago in anti-malarial measures by several State and privately-owned railways. Outlining the problem in the July issue of *Southrailnews*, the official organ of the Southern Railway, Dr. A. K. Adhikari, Consultant Malariologist to the Indian Railways, points out that the malaria sections of the medical departments of the former Bengal Nagpur and Eastern Bengal Railways, for instance, date back to 1925 and 1926 respectively, whilst the former Madras & Southern Mahratta and Great Indian Peninsula Railways had malaria organisations of long standing. These railways served areas which are notoriously malarious, though each of the existing six railways in the Republic of India runs through tracts where the disease is endemic in varying degrees. What is now part of the North Eastern Railway traverses highly malarious tracts

of Assam, where without malaria control the suffering of the railway population would have been appalling. Whilst it is not a grave problem on the Western Railway, malaria recently retarded construction of the branch of that railway from Deesa to the new port of Kandla on the west coast of India.

### Preventive Measures

**T**HE expansion of preventive work received a great impetus during the last war, largely as a result of experience in 1942-45 in Assam as a theatre of war, where many railwaymen, both civilians and railway troops, profited by the measures introduced in the light of increased knowledge. Malaria control measures today are in force on all Indian railways, with good results, and expansion of activities, including education of staff and their families, takes place whenever opportunity offers. Anti-malaria precautions, Dr. Adhikari states, consist of anti-larval measures, anti-adult (mosquito) measures, personal protection, and drug prophylaxis. One, or even two, of the above four methods are adopted at each station. Destruction of anopheline larvæ is undertaken in large railway settlements where thorough application of D.D.T. to houses is neither practicable nor economical. At present measures consist mainly of spraying of residual D.D.T. extensively. This is occasionally supported by suppressive treatment with synthetic anti-malarials. Each malarious tract is a separate entity and is controlled in the light of its individual problems.

### Trial of German-Built Diesel in Ireland

**N**EXT month the Great Northern Railway Board is to receive on trial an 0-8-0 diesel locomotive, built specially by Maschinenbau Kiel A.G. The trial, which is free to the G.N.R. Board, arises from the invitation issued by the Board in April for diesel locomotives of three types: 350-400-h.p. shunter, suitable also for general or light turn working; 800-h.p. goods; and 1,000-h.p. express passenger and goods. The manufacturers are paying freight and insurance charges to Dublin, and with the locomotive will come an English-speaking crew. The locomotive, which is intended to haul 500-ton goods trains at 33 m.p.h. and 250-ton passenger trains at 53 m.p.h., and will be tried on such services, is being assembled to the exact specifications of the G.N.R. Board and will be finished in the G.N.R. standard colours of blue and cream. The tenders specified that one locomotive of each type was required at first, and that in the event of more locomotives being required the manufacturers were to co-operate with the Board in arrangements by which the greatest possible amount of manufacturing and assembly could be carried out at the G.N.R. works at Dundalk.

### Locomotive Boiler Capacity

**E**LSEWHERE in this issue is the first of a series of articles giving the results of tests carried out by British Railways on two freight locomotives. They are chiefly interesting as showing how boiler capacity influences performances in respect of power output and economy. Except in the size of the boilers and coupled wheels, the engines concerned are identical, so offering an opportunity to assess difference in performance directly attributed to boiler steaming capacity. The boilers compared differ only by having in one case a wide firebox with a large grate area, and in the other, a normal type of narrow firebox, with, consequently, less grate area. When these two boilers are fired with the same quality of coal, the boiler with the smaller grate is rather more efficient when comparison is made on the basis of coal fired per sq. ft. of grate area per hr. On the other hand, when comparisons are made on the basis of steam production taken for a given steaming rate, the boiler with the larger grate needs substantially less coal. As showing the effect of boiler capacities on locomotive performance, the tests are of considerable value.

### Overseas Railway Development

**T**HE activities of the Crown Agents for Oversea Governments & Administrations, formerly the Crown Agents for the Colonies, extend to more than 40 territories and administrations. The railways for which the Crown Agents act as the agents in the United Kingdom are scattered over three continents, diverse in climate, physical features, and peoples. This diversity is reflected in the railway systems and presents special problems in locomotive and rolling stock design. During his many years of service, Mr. A. Campbell, Chief Mechanical Engineer, Crown Agents for Oversea Governments & Administrations, has been closely associated in the design and supply of locomotives, coaches, wagons, and mechanical equipment to the requirements of these railways. In the light of the economic and transport progress of the territories of the British Commonwealth the title, "Growing Up," which Mr. Campbell chose for his presidential address to the Institution of Locomotive Engineers last Wednesday was most appropriate.

Before 1912, said Mr. Campbell, advisory and consulting work for the colonial railways was carried out by firms of consulting engineers, but about that time the Crown Agents established an Engineering Designs Department to undertake this work within the organisation. In 1912 12 railways were administered by colonial governments. At the end of the 1914-18 war three more overseas territories came under the Colonial Office—Palestine, Iraq, and Tanganyika. With the purchase of the private railways in British Guiana in 1921, the number of railways under the aegis of the Crown Agents increased to 16. In the next few years railways in the colonial territories underwent their greatest expansion, but the world economic depression of the 1930s, although in some respects affecting these countries later than more economically developed countries, inevitably turned railway surpluses to deficits, and brought construction to a standstill. Not until 1936 did signs of returning prosperity allow new programmes of construction to be planned.

The outbreak of war in 1939 restricted, if it did not stop, railway expansion. After the Japanese occupation of the British territories in the Far East, the railways there were lost to the Crown Agents for the remainder of the war. The other railways in British territories contributed greatly to the war effort, becoming important strategically in the supply of food and raw materials, and, in Africa, directly supporting campaigns. The end of the war brought to the British overseas territories plans for far-reaching changes, some of which are still being formulated. The period 1945-54 has been one of great prosperity, if extreme difficulty, for the countries concerned, and might be termed one of replenishment.

After discussing the railway systems of the Asiatic countries and of the Caribbean for which the Crown Agents are responsible, Mr. Campbell directed attention to those in Africa, which, he considered, offered the greatest scope for development, and where considerable expansion might be looked for in the near future. From personal investigation he had formed, he said, an idea of the possibilities in East and West Africa. The East African Railways & Harbours Administration, which came into being on May 1, 1949, by the amalgamation of the Kenya & Uganda Railways & Harbours and the Tanganyika Railways & Port Services, is the largest system in the British colonial territories of Africa, having not only more than 3,000 route-miles of metre-gauge railways but also lake and marine services totalling some 4,500 miles and road transport services of over 1,600 miles. Since 1945 the ever-increasing demands of imports and exports and the growth of internal traffic have strained the resources of the railways to the utmost. The rate of growth is indicated by the fact that the capital accounts of the constituent systems were, in 1939, approximately £28,000,000, but had risen to £35,500,000 in 1946, since when loan authorisations to the united system have been approved to the amount of an additional £59,250,000.

In the past, said Mr. Campbell, axle loading and spacing in locomotive designs approved by his department were



governed by the strength of bridges, not of track. By tapering the axle loading so that, of many closely-spaced axles, the leading axle is light, with loading increasing progressively to the centre axles and then decreasing again, reversal of stresses in the track is minimised as it is gradually depressed, held down, and gradually released. This principle is being followed in the design of the new 4-8-2+2-8-4 Beyer-Garratt locomotives of 255 tons now under construction. Another innovation on the East African Railways is the light-alloy coaching stock being delivered, and the first vehicles of this type to be constructed in the United Kingdom for main-line services on an overseas railway. For some years new locomotives and rolling stock have been built for, and track relaying carried out by, the E.A.R. in such a way as to facilitate conversion from metre to 3-ft. 6-in. gauge, in view of eventual connection with the railways of that gauge in Southern and Central Africa.

A standard minimum structure gauge has long been adhered to by the Gold Coast, Nigeria, Sudan, East Africa, Nyasaland, Rhodesia, and South Africa. A common maximum loading gauge is in process of realisation. Uniformity in these respects will be of great benefit to the future of African transport. After the war it was agreed that much greater standardisation of equipment of colonial railways was desirable. At a conference in 1950 attended by delegates from African colonial railways and representatives of manufacturers and British government departments, views were exchanged and agreement reached on policy. The Crown Agents were asked to undertake the secretarial work involved and another conference was decided on. At this second conference, and at a third conference held in London in April this year, progress was made in bringing about greater standardisation of mechanical equipment on the African colonial railways. Mr. Campbell said that the contacts and discussions at the conferences had paved the way to a better understanding and a closer collaboration, and it was hoped that they would lead to a wider association of railways in Africa as a part of the development of the transport system of that continent.

### A Rational Approach to Dieselisation

**A**T a time when many railways in the U.S.A. have turned, or are turning, to complete dieselisation as the answer to economic problems, an attempt by Mr. Wayne A. Johnston, President of the Illinois Central Railroad, to "put the diesel story in proper focus," is of more than usual interest. Mr. Johnston was giving a talk in New York on "The Illinois Central Railroad in 1954." One of the most profound technological changes in American life in the last decade, he points out, has been the replacement of the steam locomotive by the diesel. In 1940, the year before the U.S.A. entered the war, there were 800 diesel locomotives in the country, compared with 40,000 steam. In March, 1954, there were nearly 23,000 diesels. The Illinois Central itself is scrapping steam locomotives at a rate of over 100 a year.

Motive power, however, is only one phase of railway business. The Illinois Central has acquired diesels slowly, though it was one of the first U.S.A. railways to introduce them. This has not been because the value of the diesel is doubted, as tests have shown the flexibility and economy for shunting purposes of this type of locomotive. Mr. Johnston assesses the cost of an all-purpose diesel locomotive of 1,500 h.p. as \$165,000, and that of a 2,400-h.p. passenger locomotive at over \$250,000. Among the reasons he puts forward for the gradualness of the conversion on his railway is the need to put financial affairs in order. Money needed to pay off debt could not be used to buy locomotives. Again, it had long been hoped that a modern coal-burning locomotive could be evolved, as the Illinois Central is a coal-carrying line, which in 1953 handled nearly 500,000 wagon-loads of coal, representing some 25 per cent of the total wagon-load traffic. Relations with mining companies in the territory served by the railway

are important, and there are large coal deposits in West Kentucky and Southern Illinois.

For the last nine years the Illinois Central has joined with a number of other railways and coal companies in sponsoring research on a coal-burning gas-turbine engine. The American Locomotive Company has since joined in this project and a stationary engine has been built and is under test. In this engine, air heated by the burning of pulverised coal turns a large turbine, which in turn operates generators which supply electrical power to the motors.

Another reason for the retention of steam locomotives has been the excellent state of the locomotive stock. Just before the war, when the Illinois Central realised that a new motive power stock programme was impracticable, its steam locomotives were passed through shops for improvement and conversion. In 1935-42, 1,600 locomotives were so treated. Finally, the geographical factor of a railway with many water-level routes meant that steam locomotives could be worked to the best advantage.

Most of the early purchases of diesels were shunting locomotives, since it is in shunting that the virtues of the diesel most easily are demonstrated. At present over 60 per cent of the diesels on the Illinois Central are shunting locomotives, which handle 77 per cent of all such duties. A programme of dieselisation of passenger haulage followed, and is now 85 per cent complete.

In 1953, purchases of 35 general-purpose 1,500-h.p. diesel locomotives were made, these being placed in service on the company's southern and western lines; the areas they serve are those at the greatest distance from the coalfields. By the end of 1953, some 25 per cent of the 1,100 locomotives were diesels, and 16 per cent of total freight-train miles was being worked by diesels. This year, 48 more all-purpose diesels have been purchased and two more passenger diesels. When these are all in service some 32 per cent of freight will be diesel hauled. The 50 locomotives will have cost \$8,400,000, roughly the same amount as has been spent over the last few years. The financing of the programme will be by an equipment trust, a now familiar feature in the U.S.A.

This gradual dieselisation is defended by Mr. Johnston, who emphasises that the "transportation ratio" of the Illinois Central at the end of 1953 was 34.5, well up among the best results in the country. The railways which showed better results were more highly dieselised, but most of the railways with poorer results also had a higher percentage of diesels, and four were completely dependent on diesel traction. The Illinois Central has thus produced good results while keeping investment down to a modest level. With a greater degree of dieselisation, as Mr. Johnston remarks, the railway should do better. If the coal-burning gas-turbine locomotive appears in time, the way to even lower costs may be open.

### Proposed Works in East Africa

**A** MASTER plan drawn up for the major development of the main workshops of the East African Railways & Harbours in Nairobi includes improved locomotive handling facilities, erection of a new carriage and wagon repair shop, and of a re-sited and partly-mechanised foundry, and the provision of a system of roadways to carry low-loader runabout trucks to accelerate the distribution of materials, equipment and spares. The scheme, estimated to cost a little over £500,000, is essential to cope with the greater number of locomotives and rolling stock which will come into service during the next ten years. At recent meetings of the Railways and Harbours committees and the Transport Advisory Council in Nairobi, it was recommended that the sum of £144,000 be spent on mechanical and electrical equipment, marking the first stage of the plan.

The realignment of a short section of the Uganda main line between Dagoretti and Kikuyu, the site of many delays to both passenger and goods trains during heavy rains, was recommended to be carried out at once. Attempts to stabilise the existing banks have been unsuccessful and it is therefore proposed to re-align for about half-a-mile, at



an estimated cost of £22,500. Measures to cope with the ever-present problem of water supplies were the subject of memoranda and approval has been given to schemes at Tura (Tanganyika Central Line), Kibigori (Kisumu Branch) and Kyabe (Kenya-Uganda Line), costing £32,000. Voi station yard is to be enlarged at a cost of £22,000 to obviate delays to freight trains and provide facilities to cope with expected increases of traffic.

The purchase of a 60-ton ex-military floating crane was recommended. This crane, now available at Mombasa, will be a much-needed addition to the heavy lifting equipment at the port. It will be particularly useful for handling large deliveries of heavy locomotives and rolling stock expected over the next two years, and for assisting with the new construction works and exploratory works in connection with new berths on the mainland. The expenditure of £45,500 on the provision of a comprehensive radio-telephone communications network in the ports of Mombasa and Dar es Salaam, and the conversion of the lighter *Sybil* into a self-propelled cargo and passenger vessel for service at the south end of Lake Victoria at an estimated cost of £30,000 were also recommended.

Housing was featured prominently in the memoranda considered by the two Committees and the Council. The expenditure of £232,600 sanctioned will allow of the construction of 24 junior European flats (twelve in Nairobi and six each in Nakuru and Eldoret) to be occupied mainly by the additional locomotive drivers who are being sought in the United Kingdom; a further stage in the programme of renewing temporary African quarters on the main and branch lines of Tanganyika; five senior and nine junior Asian houses and four senior and seventy-four junior houses at Dar es Salaam, and six European flats at Mombasa. The sum of £30,000 was also provided for site development works at Makongeni, Nairobi, in respect of seven blocks of flats in the major scheme to provide nearly two thousand junior and senior African housing units in two-storey flats. This development also includes the provision of a market, social centre, welfare clinic and a school with playing fields.

### Winter Timetables, Eastern, North Eastern, and Scottish Regions

FOR the first time for many years, as the result of seasonal decelerations over the Eastern and North Eastern Regions and of the substantial West Coast accelerations reviewed in our September 10 issue, the timings of the principal day trains this winter between Kings Cross and Edinburgh will be on an average slightly longer than those between Euston and Glasgow, whereas previously the former have always had the advantage. The 10 a.m. up "Flying Scotsman" thus now takes 7 hr. 36 min. from Edinburgh compared with the 7½ hr. of the up "Royal Scot" from Glasgow; and the up "Heart of Midlothian" 7 hr. 46 min. compared with the 7½ hr. of the up "Midday Scot." Down, the "Flying Scotsman's" 7½ hr. is faster than the down "Royal Scot's" 7 hr. 40 min., but the "Heart of Midlothian" and the "Midday Scot" are both timed at 7½ hr.

The most substantial East Coast deceleration for the winter is that of the 7.45 a.m. from Newcastle to Kings Cross, which now starts at 8 a.m., calls additionally at York, and is due in London at 1.7 instead of 12.39 p.m. It is hard to see the necessity for the York stop, as the 8 a.m. is followed from Newcastle by an 8.15 a.m. express to York, making the same stops, and the departure of the former from York to London at 9.36 a.m. is preceded by the 9.15 a.m., calling only at Doncaster, and followed by the 9.47 a.m., calling only at Grantham and Peterborough. The 1.18 p.m. from Kings Cross to Leeds has its usual winter deceleration of 23 min. caused in part by the withdrawal of the 2.18 p.m. down, which makes necessary additional stops at Newark and Retford, and also by the extension of the Wakefield stop from 5 to no less than 14 min., as last winter.

On the Great Central main line south of Sheffield the

only change of note is that the 2.18 p.m. from Manchester to Marylebone leaves Manchester 8 min. earlier, and Sheffield at 3.15 p.m., 16 min. earlier, calls additionally at Woodford Halse, and reaches London 10 min. earlier, at 7.10 p.m. The accelerations between Sheffield and Manchester resulting from electrification vary very considerably; twelve trains are speeded up by 13-35 min., but in some cases the cut is only 2-5 min., and compared with last winter the westbound Harwich-Liverpool through train has its time from Sheffield to Manchester Central increased from 69 to 76 min. Two additional trains are run in each direction in 60 min., calling at Penistone, Dinting, and Guide Bridge; they leave Sheffield at 5.12 and 9.8 p.m., and Manchester London Road at 11.30 a.m. and 8.30 p.m. The fastest booked time over this 41.3-mile route is 51 min. by the 1.25 a.m. (Mondays only) from Manchester London Road, and fifteen trains are allowed from 57 to 64 min.; before the war, with steam, the fastest time was 55 min. in the reverse direction (4.55 p.m. from Marylebone).

In the Eastern Section electrification works between Shenfield and Chelmsford have resulted in increases of 3-5 min. in the times of all main line trains over this route; most of the fastest Liverpool Street-Norwich trains are now allowed 2½ hr., except the 12.30 p.m. down, which with an additional Colchester stop, as last winter, takes 2½ hr., and the 3.30 p.m. down "Broadman," which retains its 44 min. run over the 46.3 miles from Ipswich to Norwich, and reaches Norwich at 5.33 p.m.

The closing of Cromer High Station has little effect on the times from Norwich to Cromer, which in most cases are increased by no more than 1 min. to Cromer Beach, but in the reverse direction the climb from Cromer Beach to the Junction has added 6 min. to the timings, compared with starting from Cromer High. Sheringham is in the curious position of having its times from London increased by from 4 to 21 min., whereas those to London in some cases are slightly reduced; the 4.20 p.m. up (previously 4.8 p.m.) thus is 7 min. faster, reaching London in 3 hr. 40 min. This is because previously, in the down direction, the Sheringham portions were detached at Cromer Junction, and run from there direct, whereas those in the up direction were worked up to Cromer Junction and then backed into Cromer High for attachment to the London trains; now all Sheringham trains run into and out of Cromer Beach. In the London suburban area, the times of the majority of the trains between Liverpool Street and Enfield Town and Chingford have been cut by 2 min. each way.

The North Eastern Region has no changes of note, other than the 7.45 a.m. from Newcastle to the south starting at 8 a.m. and calling at York, as already noted. Over the fast course between York and Darlington (44.1 miles) this winter there will be one northbound run in 41 min. (the "Tees-Tyne Pullman") and four in 43 min.; southbound there will be two in 42 min., one in 43 min., and three in 44 min. Before the war the fastest northbound start-to-stop timing was 46 min. and southbound 43 min.

In the Scottish Region the acceleration of the "Royal Scot" and the "Midday Scot" between Euston and Glasgow was referred to in our September 10 issue. The two southbound trains (10 a.m. and 1.30 p.m.) share the "Royal Scot's" 111 min. timing of last winter over the 102.3 miles from Glasgow Central to Carlisle, including the climb to Beattock summit; the northbound "Royal Scot" (3.39 p.m. from Carlisle) reverts to its 121 min. non-stop timing of last winter, but the "Midday Scot" at 7.10 p.m., with 125 min. only and stops at Carstairs and Motherwell, is 9 min. faster than before. A connection to the latter train from Carstairs gives an arrival in Edinburgh at 9.15 p.m., in 7½ hr. from Euston, the fastest since the war. The 12.50 p.m. from Glasgow St. Enoch to Carlisle, via Kilmarnock and Dumfries, no longer connects at Carlisle with the up "Midday Scot," but now with the 12.12 p.m. from Perth to London, which takes up from Carlisle the previous "Midday Scot" working, after covering the 73.5 miles from Carstairs to Carlisle in 72 min., the fastest scheduled run in Scotland. Certain of the substantial summer accelerations between Aberdeen and Inverness are retained in the winter service.

## LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of correspondents)

### Recognition of an Act of Gallantry

September 7

SIR,—We have been having some correspondence with Mr. George Dow, Public Relations & Publicity Officer, and in his absence with Mr. J. W. Tonge, Assistant Public Relations & Publicity Officer, British Railways, London Midland Region, on the subject of a watch which belongs to the wife of the President of Thos. Cook & Son Inc., New York. In the watch there is an inscription which reads as follows:—

"Presented to John F. Taylor by George Campbell as a mark of admiration for his calmness and ability in time of danger and appreciation of his valuable services—4th November 1864—12916"

Is there any record, please, which would give an indication of who Mr. George Campbell was, and of the occasion on which Mr. Taylor's calmness and ability was so appreciated by him? It is believed that this had some connection with a test of a new hydraulic brake on a train between London and Liverpool, but the contemporary railway periodicals in the possession of the London Midland Region, and the minutes of the London & North Western Railway throw no light on the incident.

It is possible that some of your readers could help and perhaps, therefore, you could be kind enough to have the enclosed letter reproduced in your columns.

For any assistance you can give us we should be most grateful.

Yours faithfully,

V. D. FAY,  
General Manager

Dean & Dawson, Limited,  
40, Stratton Street, W.1.

### Railway Freight Movement

September 17

SIR,—In the first part of his article "A Paradox of Modern Railway Management" in your issue of August 20, Mr. A. R. G. Saunders refers to the Nigerian Railway, and I would like to comment. No doubt, Mr. Woodward will carry on from 1939, when my responsibility for the railway ceased.

The primary operative duty of a railway is to accept all traffic offering and to convey it with the greatest speed possible between forwarding and destination, consignees being expected to do their part in removing the goods promptly on arrival. This also devolves upon steamships at the ports.

To suggest that any general manager would attempt to operate a general goods service on an unalterable system of full wagon loads, maximum train loads, and minimum train miles is fantastic; unless the whole volume of goods was handed to an Express Company to hold and forward in full wagon loads, under reduced rating for such.

To provide sufficient motive power and rolling stock to carry the maximum possible demand from every station at the same time would involve extravagant and unjustified capital expenditure, with resulting interest and frequent periods of idle stock.

The art of railway operating is to use its tractive power and rolling stock (acquired under a progressive but not wasteful capital expenditure) so as to provide the fastest and most comprehensive point to point movement of freight practicable; the constant aim being to satisfy the primary operative duty of the railway, as above stated.

Railway statistics are of two kinds: (1) those which form a tool of flexible management, and (2) those which display the precise use which is being made of the railway equipment. Both are necessary. For example: a most useful tool of management, obtainable with the punched card system, is the weekly average elapsed time in m.p.h.

of all wagons between forwarding point and destination, including all yard and station delays en route. Improve that figure, and you have improved the whole railway.

To turn to the Nigerian Railway: before 1939 the piles of groundnuts at Kano were caused because the commodity was being brought in daily from all points of the compass in excess of the shipping facilities at the seaports. The system was to put groundnuts on rail at Kano to meet specified ship arrivals at the ports. Any other method would have caused the port transit sheds to overflow, and to lose their *in transit* function, to the detriment of other export goods.

Since the war, I understand that serious groundnut accumulation at Kano has been caused by a serious shortage of motive power and rolling stock brought about by the impossibility of getting deliveries of engines and stock during and immediately after the war, but now filled. I expect that Mr. Woodward, the recently retired General Manager, will deal with this point.

Elasticity of demand is recognised by all railway managers and met to the utmost extent allowed by the facilities available. The larger the railway, the more complicated the requirement becomes.

Yours faithfully,

G. V. O. BULKELEY

Botha's Hill, Natal

### Higham and Strood Tunnels

September 17

SIR,—There has been a good deal of argument between railway historians on the subject of the Thames & Medway Canal tunnel, between Higham and Strood, Southern Region. The debatable point is whether it was made in the first place as one tunnel or two. The matter is of some importance, in view of the prejudice against long tunnels when passenger-carrying railways were projected.

As the result of research I am satisfied that the opening in the middle was cut subsequently, though not for the benefit of the railway. Is this the general opinion?

Yours faithfully,

L. T. CATCHPOLE

Lyndhurst, 56, London Lane, Bromley, Kent

[Higham Tunnel and Strood Tunnel are understood to have been constructed as separate tunnels for the Thames & Medway Canal, with a gap in between as a lay-by for barges.—ED., R.G.]

### The Third Goswick Derailment

September 18

SIR,—What strikes me in the account of the third Goswick accident in the Inspecting Officer's report summarised in your September 17 issue is that this accident would never have occurred if Sir Nigel Gresley's type of valve motion had been adhered to, which is accessible; quite possibly the inaccessibility of the valve gear in this and similar locomotives arises from its being added in later years and not forming part of the original design. It is a wonder that reversion to the Gresley derived motion was not recommended by the Inspecting Officer.

Were all the bogie vehicles in this train coupled by the Buckeye coupler, including the coupling between the tender and the first vehicle? It was apparently the Buckeye which saved the situation in the North Queensferry tunnel accident. Perhaps it would be well if that type of coupler were made standard for all passenger train vehicles, and not merely for main-line corridor stock.

Yours faithfully,

W. LOCH KIDSTON

6, Chester Street, Edinburgh, 3

## THE SCRAP HEAP

### Travelling by Train

Mr. G. R. Mahon has just come across a pamphlet on railway accidents, published exactly 100 years ago. . . it seems to take the view that . . . it is safer to remain where you happen to be; but if you must journey from one place to another by train you may possibly increase your chances of survival by following certain precepts. . . There is something charming about Rule VI: "Express trains are attended with more danger than ordinary trains. Those who desire the greatest degree of security should use them only when great speed is indispensable." . . .

Even if you have no intention in the world of taking the "Enterprise" from Dublin to Belfast today—or any train, anywhere—you are not entirely out of danger. "Persons on or near railways," says the pamphlet, "appear to be sometimes seized with a delirium or fascination which determines their will by an irresistible impulse to throw themselves under an approaching train. Cases of this kind occur so frequently, and under such circumstances as cannot be adequately explained by predisposition to suicide."—"Pro-Quidnunc" in "The Irish Times."

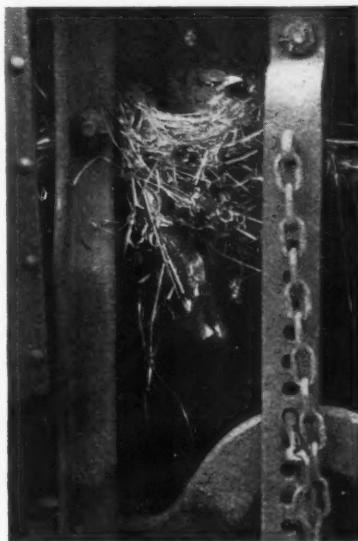
### Miles Away

The distance to a locality served by a station is seldom shown on the station nameboard. The board at Maentwrog Road Station, on the Bala Junction to Blaenau Festiniog branch of the Western Region (formerly Cambrian Railway, and later G.W.R.) is one of very few such in this country. The correspondent who sent us the photograph reproduced below points out that Festiniog is spelt by the Western Region as was done presumably by the Cambrian in the first place, with one f, though the official place name is Blaenau Ffestiniog. One reason for giving the distance to Tan-y-Bwlch may

have been the existence of a nearby station so named on the narrow-gauge Festiniog Railway, now closed.

### Attending the "Highland"

In the midst of the Highland Show rush [see *The Railway Gazette* of August 6] British Railways had another



Photo]

[Dumfries & Galloway Standard

### Blackbird's nest in horsebox undercarriage

"minor headache" at Dumfries Passenger Station. A Mrs. Blackbird decided to raise her family of three in the undercarriage of a horsebox in the carriage sidings. Fortunately for the mother, other vans of this nature were available for a short period, and the station staff were able to let her remain. It was necessary to shunt the horsebox on several occasions, which did not

appear to disturb the occupants of the nest; neither was the blackbird unduly concerned with the constant passage of officials and workmen. In fact, they have become regular visitors to this unusual nesting place.—From "*British Railways Magazine*," Scottish Region.

### Passenger Fares and Services

A cry is sometimes raised by English shareholders in Scotch lines that on this side of the Tweed the fares are too low, or the low class of fares taken too much advantage of, and the question has been asked, "Are Englishmen to make railways for Scotchmen to ride upon?" On most of the great English lines, no trains take carriages of lower than the second class, save the first morning train which takes the "Parliamentary" class, while in Scotland there is at least one other train in the morning with what are called third class carriages.—From "*The Scotsman*" of September 11, 1854.

### To A.B.

(See *The Scrap Heap* of September 17) "Old flame," my foot! Don't shackle me

Your stalking-horse against modernity. Offensive bard, I'm younger far than you—

I was rebuilt in 1922!

—MISS WATERLOO

### All Embracing

A.B. loves Waterloo; it really is the limit,

For I in times of war did my fire-watching in it.

The narrow corridors gave claustrophobic me

A permanent eye flicker and water on the knee.

Room by room I staggered, the mighty and the small,

The former with the carpets down, the latter none at all.

Bangs and wallops all outside and not a wink of sleep

As up and down the stairs I went with fearful waiting creep.

No lovers, Waterloo and I, for her embracing arms

I found a little pressing in those days of war alarms.

And A.B. hits the nail indeed, he might have coined my name

When he in amorous desire refers to an "old flame."

So if he's romance seeking, to your A.B. I toss

The prior claims across the Thames of ugly Charing Cross.

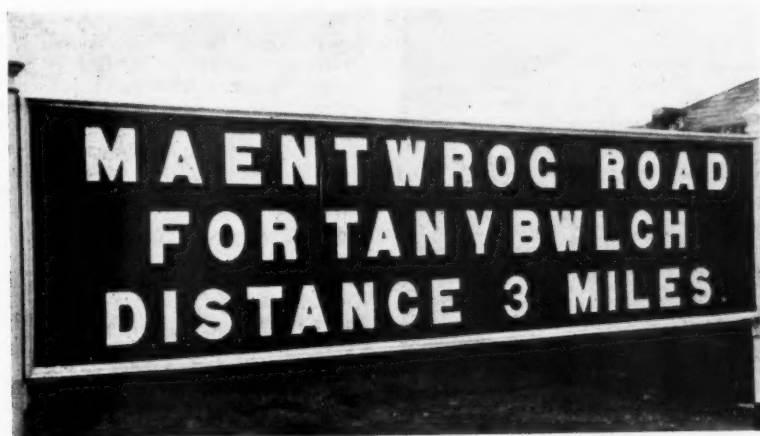
For on the concourse echoing are footsteps loud and clear

Of many lovers' greetings from year to passing year.

And how those lovers challenge Time's demanding knock,

By always fixing meetings "underneath the Clock."

A. C. P.



Photo]

[B. E. Timmins

A rare instance of distance to neighbouring village shown on nameboard



## OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

### EAST AFRICA

#### Locomotive Naming

The E.A.R. has begun to name its new "60" class Beyer-Garratt locomotives after past and present Governors. These are the latest and most powerful of Beyer-Garratt locomotives to be delivered; of 27 ordered, 25 have been received and 20 are in service. Sir Edward Twining, Governor of Tanganyika, named one of the class after himself at a ceremony at Dar es Salaam on September 18. On September 25, Sir Andrew Cohen, Governor of Uganda, will name another locomotive at Kampala and Sir Evelyn Baring, Governor of Kenya, will name a third of the class at Nakuru on September 29.

With the subsequent naming of the other locomotives after past Governors, the "60" class will become known as the "Governor" class. The policy of naming locomotives is to continue and it has been suggested that the "59" class Beyer-Garratt locomotives, delivery of which is expected to begin in 1955, should become the "Tribal" class.

#### Record Revenue on Central Line

Revenue earned on the Central Line (Tanganyika) reached an all-time record in the week ending September 4, when the receipts amounted to £67,934, £4,864 more than the previous highest recorded for the week ending June 26 last.

The comparable figure for the same week last year was £56,043. Goods traffic brought in an additional £6,241, and road services had an increased turnover of £3,508. Passenger services, too, showed an increase of £1,144 over the previous year's figure. This was made possible largely by the placing in service

of 17 new third class coaches, with accommodation for 1,564 passengers, on the Central Line since the beginning of the year.

Of 32 more of this type of coach (2,944 seats) on order for Tanganyika, six are expected in Dar es Salaam within the next few weeks and the others will follow without delay.

### INDIA

#### Bombay Collision

The Government Inspector of Railways, Circle No. 5, Bombay, has held an inquiry into a collision between an electric train and a shunting train which occurred on June 4 last, as reported in our June 13 issue. It has been ascertained that the accident was caused by the motorman failing to observe the rules laid down for passing automatic signals at danger. There have been several accidents of this type in India in recent years.

### UNITED STATES

#### Kansas City Improvements

The Kansas City Terminal Railroad is spending \$2,600,000 on the improvement of its interchange route between 24th Street and Fourth Street, which passes through the West Bottoms industrial area. A third track is being laid to supplement the present double line, and all three tracks will be signalled for reversible working. A single signal tower will replace two boxes at present worked by the K.C.T. and the Chicago, Burlington & Quincy Railroad, and a

new signal tower will be built at the south end of the widened line; from these two boxes many switches at present manually-operated on the ground will be worked from interlocking frames. A complete communications system, including paging and talk-back loudspeakers, and two-way communication with about 40 other signalboxes and railway offices in the area, will be provided, and improvements will also be made in the yards of various industrial organisations which have sidings connected with this interchange line, over which traffic will be considerably speeded up.

#### Record Diesel Mileage

Diesel-electric unit No. 34 of the Atchison, Topeka & Santa Fe Railway covered a total of 31,500 miles in December, 1953; and No. 27 ran an even greater mileage of 31,756 miles in January of the same year. These figures both exceed the 31,357 miles claimed recently by the French National Railways as a record for one of their straight electric locomotives, though it may be granted that the Santa Fe units had the advantage of longer continuous runs without change than the French locomotive.

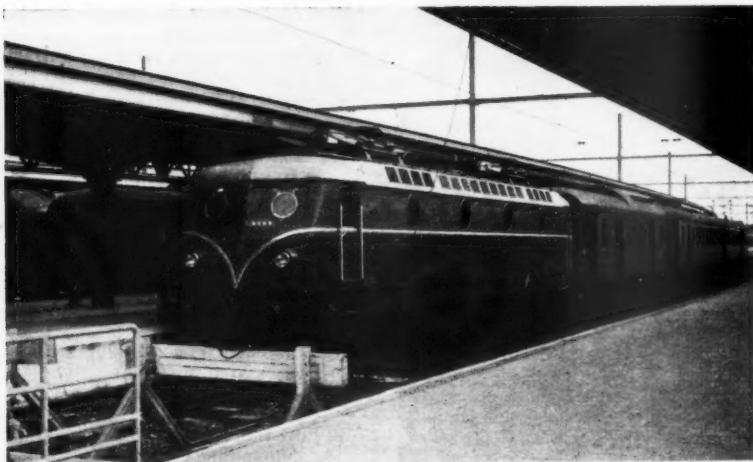
### ARGENTINA

#### New Services

The General Urquiza Railway has inaugurated a new daily diesel service between Concordia, Federal, and Paraná, as well as a new weekly train between Concordia and Concepción del Uruguay and another between Paraná and Concepción del Uruguay, via Basavilbaso. The last two run in combination with the rail-river service already established, as does a new train between Concepción del Uruguay and Posadas, which reduces from 24 to 14 hours the time previously taken between these points.

The station of the General Mitre Railway in Santa Fe has been closed and all trains transferred to that of the General Belgrano Railway. A new connection between these two railways has been made at Rosario. As a result, traffic for the General Belgrano stations north of Santa Fe is now carried by the General Mitre Railway between Buenos Aires and Rosario or Santa Fe. The night express, "El Santafesino" (General Mitre Railway) from Buenos Aires now has connections in Santa Fe (General Belgrano Railway) for Villa Guillermina, Las Toscas, Santa Sylvina, Villa Berthet, Villa Maria (S.F.), San Cristobal, Campo Gallo, Tucuman, Santiago del Estero (via Clodomira), and Resistencia. The Rosario express, "El Porteño" of the General Mitre Railway now connects with the General Belgrano Railway for Santa Fe and Reconquista at Rosario.

### Main-Line Electric Haulage in Belgium



Photo]

[M. A. Harrison

Train from Brussels at Ostend, hauled by one of the new series "122" Bo-Bo electric locomotives of the Belgian National Railways

The General San Martin Railway has inaugurated a new direct road service between Parada Chacarita, Caseros and El Palomar, available only to season ticket holders, to relieve pressure on overcrowded suburban trains. The General Mitre has recast its Buenos Aires-Rosario services, the 3½-hr. Ganz diesel express "La Flecha" having been withdrawn. The expresses now running daily between these two cities are "El Porteño," "El Rosarino," and "El Santafesino," with an extra weekend service from Rosario to Buenos Aires by the Tucuman-Buenos Aires express.

## SWITZERLAND

### New Access to Pilatus

From Kriens, the western suburb of Lucerne, a *gondelbahn* (the latest type of chair-lift, with a continuous service of four-seater enclosed cabins in place of chairs) will soon be opened up to Fräkmüntegg, the elevated plateau immediately below the east face of Mount Pilatus. A concession has been granted by the Federal Government to the Pilatus Railway to build a *luftseilbahn* (suspension line with large cabins) from Fräkmüntegg to the summit of Pilatus.

Although when complete the suspension line will form a link in a highly attractive circular trip by *gondelbahn*, *luftseilbahn*, rack-and-pinion railway

and steamer from Lucerne to the top of Pilatus and back—the concession would not have been regarded justifiable for the tourist traffic only. There are now important military installations on the summit of Pilatus, however, and it would have been necessary, if all-the-year round access to the summit were to be available, to provide the existing rack-and-pinion railway with avalanche protection and a snowplough together costing several million francs, or for the military authorities to build their own suspension line up from Alpnachstad or Alpnach. The proposed line, which will be much less obtrusive than the military line would have been, provides a solution of the problem which will also have considerable tourist possibilities. The new *luftseilbahn* will be in two cable spans only, with a single intermediate pylon on the rock face of the mountain.

### Aigle-Champéry Acceleration

The modernisation of the Aigle-Ollon-Monthey-Champéry Railway, and the introduction of four new motor coaches, as described in our September 3 issue, have permitted a complete transformation of the train service. The journey time between Aigle, on the Simplon main line of the Federal Railways, and Champéry, including the three rack-and-pinion sections and the double reversal needed to reach Monthey Ville, has been reduced from between 1 hr. 30 and 40 min. to between 1 hr. 10 and 15

min., and one special train on Sundays in the summer, with only one stop, has been making the run each week in 56 min. instead of 1 hr. 12 min.

As the line between Aigle and Monthey runs for the most part along the public road, the major part of the acceleration has been between Monthey and Champéry, where the rack-and-pinion sections are located; here the fastest climbing times of 55 to 60 min. have been reduced to 38 min. The frequency of the service also has been increased.

## WESTERN GERMANY

### Staff Welfare Facilities

In spite of the financial stringency of the Federal Railways, provision has been made in the current budget for a number of improvements in staff welfare facilities. Major works include that at Giessen and at Ulm, where new hostel buildings are to be constructed for train staff on lodging turns. A staff welfare building at Pforzheim, destroyed during the war, is to be reconstructed. Staff hostels and canteens will also be created (partly by reconstructing war-damaged buildings) at Duisburg, Wanne-Eickel, Gemünden, and Fulda. A special hostel for trainmen and shunters is under construction at Gremberg marshalling yard. Canteen and washing facilities are being improved at some permanent way depots.

## Publications Received

*Leitfaden für den Dampflokomotivdienst.*—(Guide to the Study and Management of the Steam Locomotive) 8th edition. By Leopold Niederstrasser. Frankfurt (Main): Verkehrswissenschaftliche Lehrmittelgesellschaft m.b.H., Jahnstrasse 43. 8½ in. × 6 in. × 1½ in. 606 pp. Illustrated by 360 Fig. and 12 folding plates. Price D.M. 24.—This book is not intended for designers and engineers but as a practical introduction to the working and management of engines for the guidance of running staff. This eighth edition has been subjected to a thorough revision. After a brief notice on historical developments the classification of the various types of engines is described, with the German system of numbering and marking them to denote their characteristics. This is followed by chapters on materials, lubricants, etc., and the theoretical basis of locomotive construction. Components are described with the aid of numerous drawings, down to the smallest detail. Tenders and tank engine fittings have a section to themselves followed by concise notes on special types of locomotives, such as fireless, rack rail, turbine, condenser, and high pressure. Brakes, running-shed equipment and testing are then dealt with and there is a list of the standard patterns of locomotive operating on the Bundesbahn. The

A.T.C.-equipment also is described. The folding plates give drawings of typical classes of engine, the operation of brakes (with coloured diagrams) and the standard components used in a number of engine classes, all excellently drawn and reproduced.

*Ferrovie Nord Milano: 1879-1954.*—The Nord Milano, a standard-gauge system with over 154 route miles of line running north and north-west of Milan, has produced an attractive 64-page book outlining its 75-year history and giving interesting facts and statistics of its present-day operations. Much of the line is electrified at 3,000 V. d.c. and there is a heavy traffic, particularly in the Milan suburban area. There are good illustrations of locomotives, rolling stock, stations, and towns and districts served.

*Metal Industry Handbook & Directory.*—London: The Louis Cassier Co. Ltd., Dorset House, Stamford Street, S.E.1. 9 in. × 6 in. 472 pp. Price 21s. net. (by post 21s. 8d.). Also available with the weekly journal *Metal Industry* at a combined subscription of £3 5s.—Now in its 43rd year of publication, the *Metal Industry Handbook & Directory* is a comprehensive reference book for all those engaged in, or connected with, the non-ferrous metal industries. It contains up-to-date information on the properties of the newer, as well as the more familiar metals, and an extensive section devoted

to summaries of current British Standard, aircraft material, D.T.D., and Admiralty specifications. Also included are a section on the main metal finishing processes, and data regarding all the common rod, bar, sheet, and strip products. The Directory for Buyers, which has been extended, gives a very wide range of producers, stockists, and factors of all basic metal products, metal-working machinery and tools, and other auxiliary metal finishing equipment. The compression into one volume of a continually increasing mass of information covering all the non-ferrous metals provides an indispensable reference book for all who manufacture, use or deal in these metals.

*Why Productivity?*—This is the first of a new series of pamphlets to be issued by the British Productivity Council, which, hitherto, has issued pamphlets of a technical nature. The pamphlet breaks no new ground, but states the case for raising productivity clearly and with the peculiar authority of an organisation which represents both trade unions and employers. The text is written in simple terms and is designed to be read by managers, supervisors, trade union officials and members of the public. The price is 1s., and the pamphlet is available from newsagents and booksellers or direct from the Council at 21, Tothill Street, London, S.W.1.

# British Railways Freight Locomotive Tests—1

*Tests carried out with 2-8-0 and 2-10-0 type  
using London Midland Region mobile testing units*

*By E. C. Poultney, O.B.E.*



*British Railways W.D. 2-10-0 type locomotive*

A COMPREHENSIVE series of tests now concluded with two freight locomotives, of the 2-8-0 and 2-10-0 types, is the subject of "Bulletin No. 7: Performance and Efficiency Tests, W.D. 2-10-0 and 2-8-0 Freight Locomotives," published by the British Transport Commission. These are the first tests officially carried out with locomotives built for a specific class of traffic as distinct from those previously tested, which were mixed-traffic locomotives. All the trials forming the subject of the present report have been

conducted on the road, and in view of the complete nature of the information obtained, demonstrate the practical value of the special type of testing equipment employed, as well as the efficiency with which the work has been carried out; the results presented are a standing tribute to the skill displayed by the testing personnel.

## Locomotive Types

The W.D. 2-8-0 and 2-10-0 locomotives were designed by Mr. R. A. Riddles for the Ministry of Supply during

the last war, and have many features in common.

Both types of locomotive are identical so far as cylinders, valves, and valve gears, the diameter of the coupled wheels, and boiler working pressures are concerned; they are therefore alike in maximum tractive effort, which is 34,215 lb.

## Boiler Design

The principal difference between them is in the design and size of the boilers used for these locomotives, that for the 2-10-0 being larger both in respect to heating surfaces and also in the area of the grate, which has an area of as much as 40 sq. ft., because of the use of a wide firebox which extends over the rear pair of coupled wheels.

The 2-8-0 design has the normal type of narrow firebox and the grate area is 28.6 sq. ft. The total or combined heating surfaces are 2,374 and 1,990 sq. ft. for the 2-10-0 and 2-8-0 designs respectively, and the respective engine weights are 78.3 and 72 tons. Apart from the dimensional differences noted in the tables appearing on page 347, a distinctive feature of the 2-10-0 boiler is the steel firebox, which is fitted with three arch tubes.

The leading dimensions of these loco-

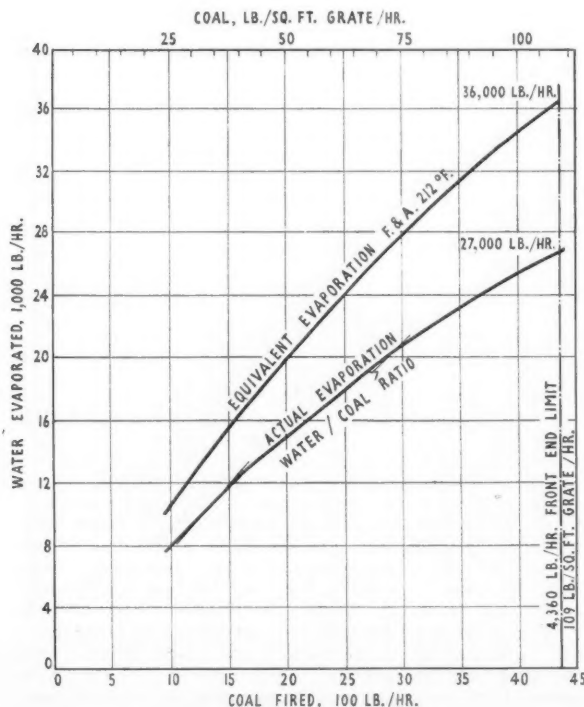


Fig. 1—Evaporation of the 2-10-0 locomotive, using Blidworth coal

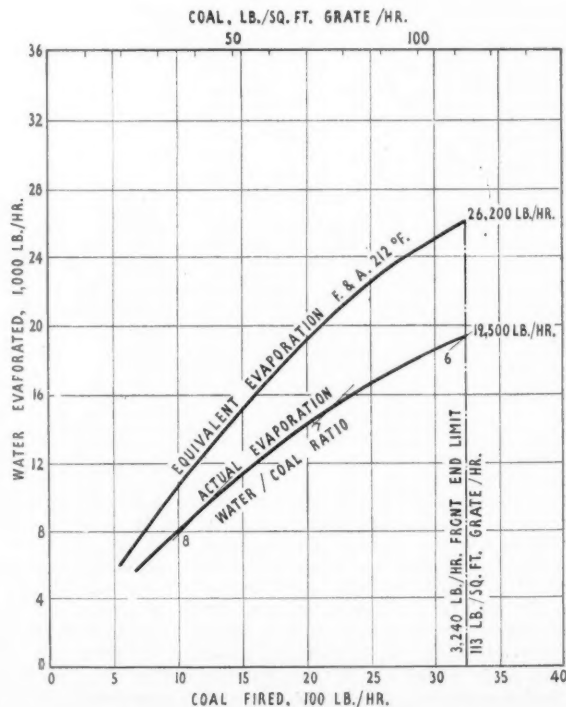


Fig. 2—Evaporation of the 2-8-0 locomotive, using Blidworth coal



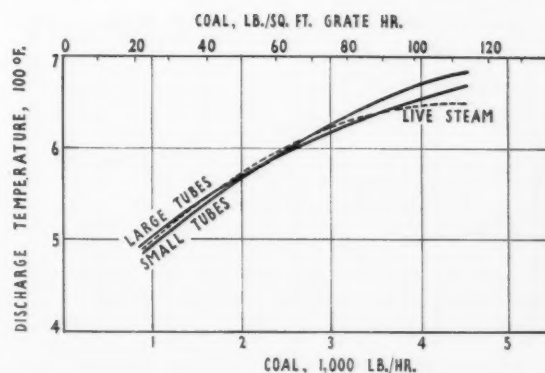
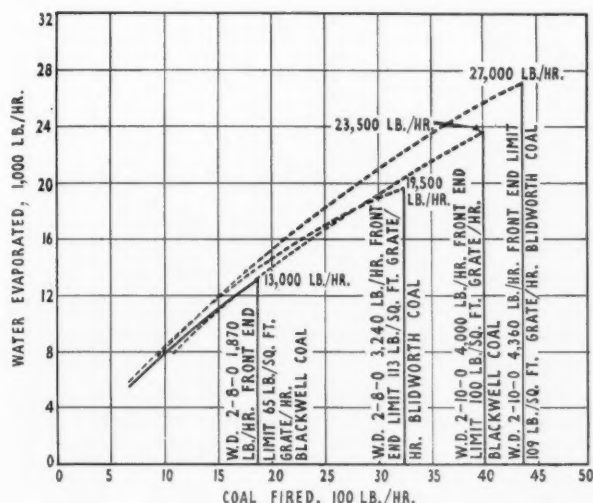


Fig. 3 (left)—Evaporation rates for both locomotives, using Blidworth and Blackwell coal; Fig. 5 (right)—smokebox discharge temperature of 2-10-0 locomotive using Blidworth coal

motives are set out in the table which follows.

Type	2-10-0	2-8-0
L.M.R. power classification	8 F	8 F
Cylinders, dia. and stroke, in.	19 × 28	19 × 28
Piston valves, dia., in.	10	10
Valve travel maximum, in.	6½	6½
Steam lap, in.	1½	1½
Lead, in.	¾	¾
Exhaust clearance, in.	¾	¾
Driving wheels dia., in.	56½	56½
Boiler steam pressure, lb. per sq. in.	225	225
Rated tractive force, lb.	34,215	34,215
Boiler heating surfaces, sq. ft.:		
Tubes and flues	1,759	1,512
Firebox	192	168
Total evaporative	1,951	1,680
Superheater	423	310
Combined	2,374	1,990
Grate area, sq. ft.	40	28.6
Engine weight, tons:		
On coupled wheels	67.15	62.0
Engine total	78.3	72.0
Tender, tank capacity, galls.	5,000	5,000
Coal, tons	9	9
Weight, full	55.5	56.0
Wheelbase, coupled, ft.	21.0	16.3
Engine, total	29.8	24.10
Locomotive, total	57.1	53.1½
Factor of adhesion	4.4	4.05
Firebox heating surface/grate area	4.8	5.87
Evaporative heating surface/grate area	48.7	58.7
Combined heating surface/grate area	59.3	69.7

2-10-0 Engine: Firebox heating surface includes arch tubes

The boiler of the 2-8-0 engine has 193 tubes, 1½ in., and 28 flues, 5½ in. diameter, carrying superheater elements having a diameter of 1½ in. The length between the tubeplates is 12 ft., giving on this basis a length to bore ratio for the tubes, which have a wall thickness of 12 s.w.g., of 93.3 to 1. The total free gas area through the boiler is 693.9 sq. in., and the gas area is, therefore, the equivalent of 16.8 per cent of the grate area.

The 2-10-0 boiler is longer between the tubeplates and has 152 tubes, 1½ in. diameter, with a length of 15 ft. 8 in. The wall thickness is again 12 s.w.g. and the length to bore ratio is, therefore, 112.8 to 1. There are 28 flues, 5½ in. diameter, and the superheater elements are 1½ in. diameter; thus the free area through the flues is the same as for the 2-8-0. The total free gas area through the boiler is 663.5 sq. in.,

which is equal to 11.6 per cent of the grate area of 40 sq. ft.

Compared, therefore, with the 2-8-0 boiler, the resistance through that of the 2-10-0 engine will be greater for equal rates of gas production per sq. ft. of grate area. When considering smokebox temperatures and draught conditions, the foregoing particulars will be found of much interest. The standard blast-pipe orifice for both the 2-8-0 and 2-10-0 types of locomotive is 5½ in. diameter.

#### Blastpipe Modifications

As received for testing purposes, the steaming of the 2-8-0 was considered poor and the nozzle was reduced to 4¼ in., as was also the nozzle of the blastpipe for the 2-10-0 locomotive. As thus modified, both boilers were considered to be satisfactory. The locomotives are not fitted with self-cleaning smokebox equipment.

Both locomotives are fitted with two live steam Monitor injectors only. The locomotives used for these trials were 2-8-0 engine No. 90464 and 2-10-0 No. 90772. The engines were each given a general repair and then run some 500 miles before they were tested, and the total mileage of each after testing was increased to about 3,500 miles.

#### Qualities of Coal Used

Both engines were tested with two different kinds of coal, (1) Blidworth cobbles, a grade 2B. hard coal, and (2) Blackwell. B. Winning, a grade 3B. soft coal. Blidworth coal is common to all locomotives so far tested; thus the results are comparative so far as fuel is concerned.

Blackwell coal was selected as providing a poorer quality for comparative purposes and is normally used for local services and shunting purposes. It produces a considerable amount of non-porous clinker on the firebars. The calorific values and proximate analysis of both the coals used are as given in the accompanying tabular statement.

#### Coal Samples—2-10-0

	Blidworth		Blackwell	
	As received	Dry	As received	Dry
Calorific value (gross) B.Th.U./lb.	12,800	13,500	11,800	12,350
Proximate analysis:				
Moisture, per cent	5.0	—	4.5	—
Volatile matter less moisture, per cent	35.0	36.8	37.9	39.7
Fixed carbon, per cent	53.8	56.7	48.0	50.2
Ash, per cent	6.2	6.5	9.6	10.1
Total sulphur, per cent	0.92	0.97	2.4	2.14
Remarks:				
Iron in ash, per cent	—	7.2	—	0.14

#### Coal Samples—2-8-0

Calorific value (gross) B.Th.U./lb.	12,490	13,350	11,750	12,500
Proximate Analysis:				
Moisture, per cent	6.7	—	6.0	—
Volatile matter less moisture, per cent	33.7	36.1	36.3	38.6
Fixed carbon, per cent	51.9	55.6	48.1	51.2
Ash, per cent	7.7	8.3	9.6	10.2
Total sulphur, per cent	0.80	0.86	1.76	1.87
Remarks:				
Iron in ash, per cent	—	8.4	—	11.0

All the tests were carried out with the L.M. Region mobile testing plant, which allows of tests being conducted on the road at selected constant speeds. The mobile test plant employed comprised the L.M. Region No. 3 dynamometer car with mobile test units Nos. 1, 2 and 3, together with a special tender which has a through passage way so that ready access may be made between the dynamometer car and the footplate of the locomotive. Vestibule connection is provided between the tender and dynamometer car for this purpose. The dynamometer car has all the usual equipment for recording speed, drawbar pull and horse-powers and includes also multi-point thermometers, draught gauges, and so on. A special feature includes a Farnborough indicator, furnishing indicator cards on a crank angle basis. There is

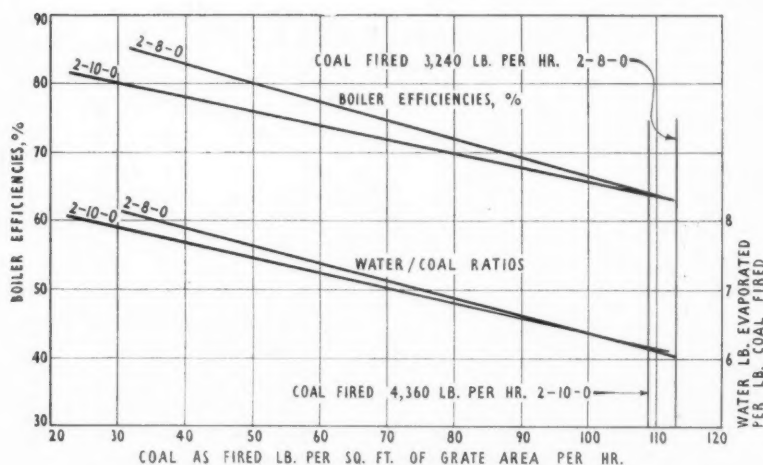


Fig. 4—Boiler efficiencies of both locomotives with Blidworth coal

also complete equipment required for the continuous sampling of smokebox gases.

The mobile test units are electrically-braked vehicles which can keep the speed constant irrespective of grades by varying the load as required and may be used singly, in pairs, or all three together according to the loading necessary. Control is applied from the dynamometer car and is regulated by hand or automatically. The special tender has divided coal spaces, one for coal used during testing, and one for that required for standby purposes. There is a meter for measuring the water taken from the tender.

#### Speeds and Cut-off Per Cent

The locomotives were tested over a range of constant speeds, miles per hour, and at cut-offs varying from 15 to 60 per cent, full regulator opening being employed throughout. In each controlled test, the reverse gear was set in the position required and speed and boiler pressure were held constant, which of course, implies constant indicated horsepowers, from which it follows there would be a constant rate of steam flow to the cylinders and, therefore a constant rate of firing. The measurement of the coal and water rates was by the summation of increments method developed at Swindon, which is used as standard practice for all locomotive tests conducted by British Railways. The following data were continuously recorded during each test run: speeds; drawbar pull; drawbar horsepower; draught readings; temperatures, smokebox gas, and steam to engines; analysis of smokebox gases; and indicator cards which were taken from each cylinder end (during the majority of the tests).

With this information, a complete range of indicated horsepowers and drawbar horsepowers with related coal and water consumptions was obtained.

The test runs were conducted on the Scottish Region main line between Carlisle and Hurlford, near Kilmarnock, the old G. & S.W.R. main line. The

total distance of each trip from Carlisle to Hurlford and return is 178.6 miles. The mobile test units were based on Carlisle (Durrant Hill) M.P. Depot and out and home trips were made each day, two controlled tests being made in each direction of running.

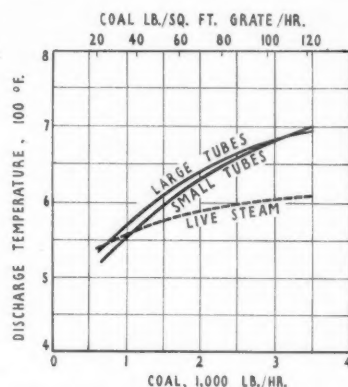


Fig. 6—Smokebox temperatures of 2-8-0 engine; Blidworth coal

Tests at the lower speeds were conducted for a period of 60-70 minutes, but, due to temporary and permanent permanent way checks, it was only practicable to run tests for 40-50 minutes at the higher speeds. Prior to all tests, a period of running was allowed to attain stable combustion conditions.

#### Comparative Performance

The 2-10-0 locomotive was tested at constant speeds of, approximately, 10, 20, 30, 40 and 46 m.p.h., and at a range of cut-offs varying from 15 to 60 per cent with a full open regulator. The later rates of cut-off, of course, applied to the lower speeds. In the case of the 2-8-0 engine, tests at over 40 m.p.h. were found impracticable owing to rough riding; further, excessive "slipping" was experienced at 60 per cent cut-off at 10 m.p.h., but satisfactory performance was obtained up to a maximum cut-off of 50 per cent.

The 2-8-0 locomotive steamed satisfactorily with Blidworth coal, and the highest rate of evaporation at which a balance could be continuously maintained between steam production and demand was 19,500 lb. of steam per hour. This is said to be the "front end limit." The Blackwell coal could not be burned satisfactorily for extended periods, and a maximum steaming rate of 13,000 lb. per hr. only was obtained for a 45-minute period. Any attempt to attain a higher steam rate failed, due to the formation of clinker deposits on the firebars which prevented the proper combustion of the coal due to lack of primary air with, in consequence, a steady fall in steam pressure.

The 2-10-0 locomotive steamed freely with both Blackwell and Blidworth coal and attained front end limits at evaporation rates with these two fuels of 23,500 lb. and 27,000 lb. of water per hr. respectively. The diagrams Figs. 1-7 are discussed in the succeeding article.

(To be continued)

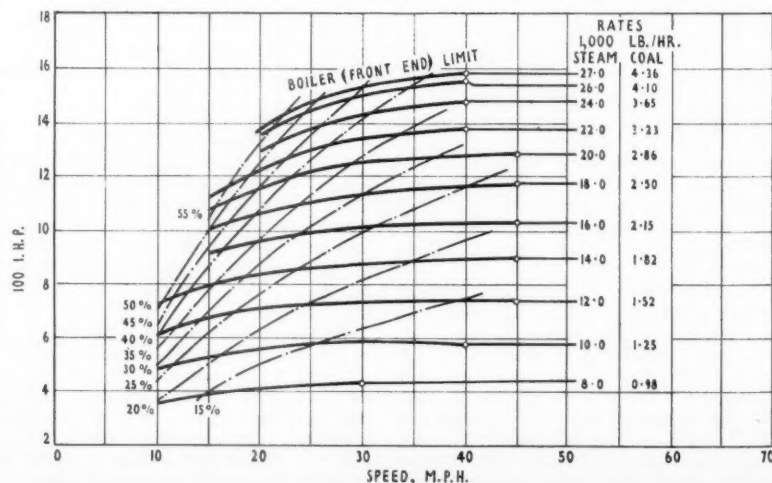
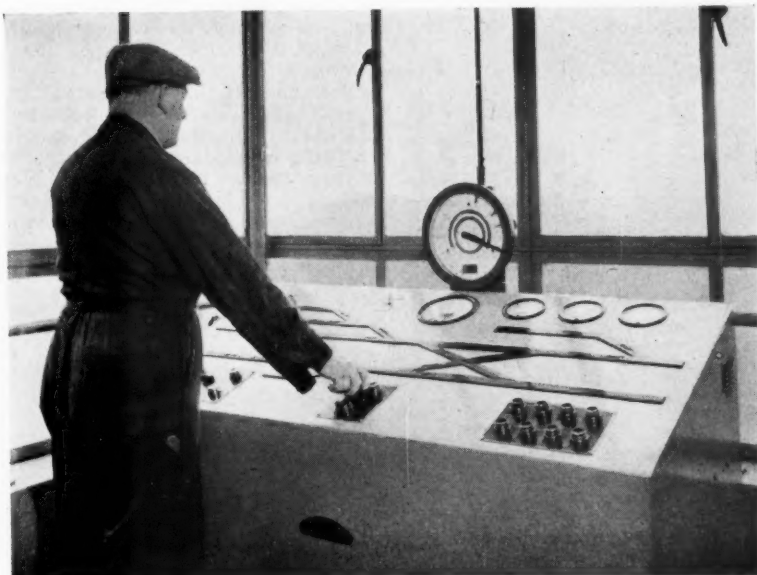


Fig. 7—Indicated characteristics of 2-10-0 locomotive with Blidworth coal

## Wagon Handling by Remote Control

*Mechanical wagon-marshalling system installed in private sidings at Leicester and Dalkeith*



Control desk at the Leicester sidings showing push-buttons and diagram of the track layout

**A** SYSTEM designed to handle coal wagons by push-button electrical control from a central point was installed at the British Electricity Authority power station at Leicester recently. This is the first such installation in this country and the first in the world. The wagon handling is performed by traversers and haulage mules fitted with devices to perform various stages of the operations automatically. The system reduces the area needed for sidings, removes the need for shunting locomotives, can operate in all weathers, and can be worked by very few men. The installation at Leicester, which handles up to 800 tons an hour, is operated by two men.

A second layout has been built at the central coal preparation plant of the National Coal Board at Dalkeith, where incoming empty wagons are taken automatically to the loading points of the coal preparation plant, weighed, and taken on to the loaded sidings. The whole operation is performed by electrical control from cabins and the only non-automatic function, both here and at Leicester, is the coupling and uncoupling of wagons in the sidings.

### Leicester Power Station

The site of the installation at the Freemans Meadows power station at Leicester is alongside the main railway line from Leicester to Burton-on-Trent. The area is limited by a main road bridge at one end and the River Soar at the other. The length available was insufficient for sidings of the normal

balloon type, and the number of sidings was so limited by the neighbouring bulk storage area that separate sidings for full and empty wagons could not be arranged. Discharge of coal at a rate of 800 tons an hour was required, equivalent to 40 20-ton wagons an hour. The weight of coal unloaded from each wagon had also to be recorded.

A set of four parallel sidings some 700 ft. long excluding the turnouts, was built. Three of the sidings are capable of receiving trains of 35 wagons each, and are laid on a down gradient. The fourth siding accommodates the wagon tippler at the lower end, and then has a gradient 250 ft. in length fitted with a booster track. The remainder of this siding has a rising gradient, terminating in a kick-back below which are points connecting with the three reception sidings. Across the lower end of the four tracks runs a wagon traverser.

The winch which drives the traverser can be connected with a separate mechanism, carried on the traverser, which operates a small trolley fitted with arms. The arms engage with the wagon axle and transfer it from the siding to the traverser. The trolley runs on a narrow gauge track laid inside the standard gauge tracks on the traverser and continued for a short distance on each siding.

Trains of full wagons are pushed into the sidings and left against a wagon stop which operates on the front axle of the first wagon. This first stop is followed, just over one wagon length ahead, by a second stop a few feet short of the

traverser pit. The siding to be worked is preselected by an operator in a control cabin next to the tippler. When the "start" button is pressed the traverser moves to the selected siding. As soon as it comes to rest the motor is re-energised and clutched-in to operate the trolley, which moves towards the second stop.

The movement of the trolley breaks, by means of a mechanical trip, the toggle holding the second stop, thus allowing the wagon standing there to roll towards the traverser. The arm of the trolley engages with the front axle of the wagon, and the motion of the trolley is stopped and reversed, bringing the wagon on to the traverser and stopping it in the correct position. A two-axle counter controls the re-setting of the stop into a position to hold the next loaded wagon.

As soon as the wagon is correctly located on the traverser the motor takes up the main cross-travel drive again, but in the reverse direction, and the traverser is brought to a position opposite the tippler track.

As the traverser moves away from the siding it operates a switch actuating the first stop and allowing the next wagon of the train to roll down to the already-reset second stop. A two-axle counter resets the first stop. An electrical interlock makes it impossible for the first wagon stop to be released, even though the traverser has moved, until the second stop has been reset.

When the traverser stops opposite the tippler track the trolley commences to move again, taking the loaded wagon on to the tippler. This movement pushes any wagon already standing on the tippler forward on to the booster track. The full wagon is then weighed, tipped, and returned to its original position. This operation follows automatically when the operator presses the "weigh full" switch. When the "weigh empty" switch is pressed the empty wagon is weighed and the next full wagon to arrive on the traverser pushes it on to the booster track.

### The Kick-Back

A down gradient from the tippler ensures that the wagon moves to the bottom of the booster track. The wagon sets the booster winch in motion by depressing two pairs of track switches. The booster, consisting of a trolley with a pair of arms which engage with the rear axle of the wagon, is rope-hauled by a winch located below rail level at the top of the incline. The wagon is accelerated up the incline at a speed selected by the operator according to weather conditions and continues to run up the incline beyond the booster track towards the kick-back at the end.

The kick-back is beyond the entry





*Empty wagon stopping on the kick-back and about to return over the spring points to its original siding*

points for the three reception sidings and consists of a steeply inclined portion of rail with stops. It is preceded by spring-loaded trailing points. The gradients and speeds are so regulated that the wagon will run on to the steep incline, stop, and commence to run back. The wagon is turned off the booster-fitted track by the spring points and by means of the pre-selector already mentioned the points are automatically set to return it to the rear of the same train from which it started. When the whole of a train has been dealt with the wagons are recoupled and withdrawn from the siding by a locomotive.

#### **Automatic Safeguards**

There are a number of safety devices in addition to those already mentioned. Slippers are fitted on the booster incline to stop any wagon which may run back. These consist of a pair of wedges mounted outside the running rails with the mechanism inside them and arranged to allow free passage in the normal direction. If a wagon runs back, the wheel flanges lift the wedges on to the rails where they act as chocks and bring the wagon to a halt.

The gradient above the top of the booster track is shallow enough to stop any wagon that fails to reach the kick-back, but in case a free-running wagon should run back, a spring-loaded turn-out at the bottom of the section would switch it into a sand drag.

The motion of the traverser trolley which places the full wagon on the tippler is automatic when the traverser comes to rest, but interlocking prevents this action taking place until the previous wagon has been tipped, returned to the lower position, and weighed empty. In addition, the booster must be at the base of its incline, and the inclined track, kick-back, and return points to the reception sidings must all be clear of traffic.

One operator controls the whole operation from a cabin at the tippler end

of the traverser pit. There is an attendant at the wagon tippler who holds a watching brief.

#### **Dalkeith Layout**

The central coal preparation plant of the National Coal Board at Dalkeith washes and screens the entire output of 10 collieries. The washery is capable of handling 400 tons an hour and the wagon-handling installation is designed to deal with 40 10-ton wagons each hour. The layout is restricted by the need to connect with the Dalkeith branch line from Smeaton Junction, which had been abandoned but was relaid for some one-and-a-half miles to connect with the plant sidings.

The wagon-marshalling equipment comprises an empty wagon traverser

which distributes the empty wagons from two tipplers on to eight coal loading tracks. The wagons are moved along the coal loading track by haulage mules, and after loading by boom conveyors are propelled to wagon stops at the marshalling traverser. The traverser takes the wagons from the stops, weighs them, and places them on departure sidings appropriate to destinations.

The empty wagon traverser is controlled by a man in a cabin mounted on it. He is responsible for efficient distribution of wagons from tipplers to loading tracks. The loading tracks each have their own haulage mules, the operating winches for which are mounted in a pit at the discharge end. The haulages are controlled by the two men in charge of the boom loading conveyors. The controls are finger type push buttons which give forward, reverse, and stop, and also forward and reverse inching buttons for fine control. When wagons are required for loading, the operator presses the reverse button and the mule travels down the incline, lowering its driving arm immediately, and stops automatically at a dip in the track to which empty wagons roll by gravity. The wagon being loaded is prevented from moving by spring clamps.

When the operator presses the forward button the driving arm of the mule rises and engages the wagon axle, propelling not only the wagon with which it actually engages but any wagons which may be standing in front of that wagon, up to the loading point. After loading the wagons roll forward to a set of stops to await handling by the second traverser, which moves them to the departure sidings after weighing on the weighbridge track No. 7.

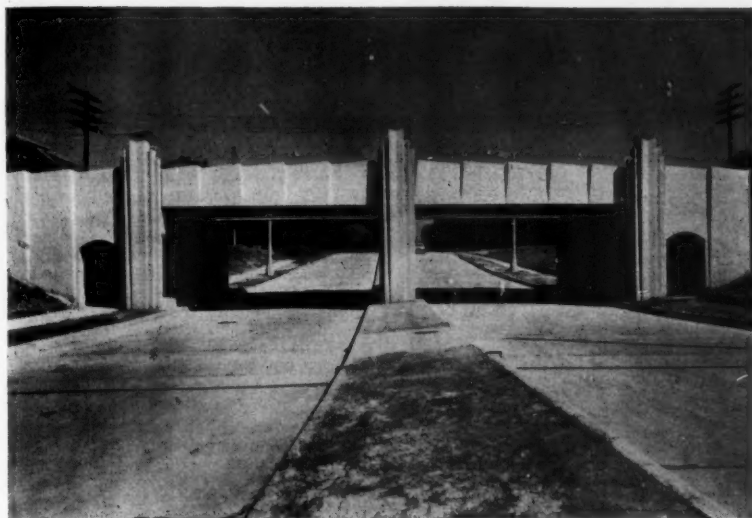
The designers of this method of wagon handling are, Mitchell Engineering Limited.



*Mule of booster track with driving head engaging wagon axle. The treadle which starts the mule can be seen by the left-hand rear wheel of the mule*

## New Orleans Improvement Works

*Included are \$17,000,000 new railway works  
and the replacement of 100 level crossings*



*Marconi Drive underpass, an example of unusual architecture*

**F**OR the past eight years the New Orleans city authorities have been planning a great reorganisation of the whole city transport system both road and rail. Hitherto eight major railways have served it through five different stations in various localities including a union station now demolished. To reach these stations the many approach lines and their connections intersected the streets and highways at 144 level crossings, there being no over- or under-bridges. The eight railways concerned are: the Illinois Central; Southern Pacific; Louisville & Nashville; Kansas City Southern; Gulf, Mobile & Ohio; Southern; Missouri Pacific; and Texas & Pacific.

To achieve a reasonably efficient transport system throughout the city, no fewer than 100 of the level crossings are being eliminated and the five old stations have been replaced by a single new union station, where all passenger, mail and express traffic is now centralised. This change has necessitated the construction of new approach lines, the modification of others, and the provision of new locomotive, carriage, and other servicing facilities.

The whole vast scheme is estimated to cost some \$57,000,000 and the railway works involved constitute a large proportion of it. Their climax was reached on May 1, 1954, when the new station was formally dedicated. The change-over has allowed some of the old approach lines to be removed and has already eliminated many level crossings with consequent reduction of traffic delays in the city. The widespread system of new streets and highways is also well advanced. Moreover, the railways have moved some of their freight operations

out of the centre of the city; the Illinois Central's May's Yard, the largest in the New Orleans area, is an example.

### Charge to Railways

To finance these various improvement works, four bond issues were launched to cover the costs of (a) the principal railway works including the station, (b) eliminating level crossings, (c) street improvements, and (d) a new civic centre. (a) was a \$15,000,000 issue against rentals from the railways. The actual cost of the new station buildings was \$2,225,000 and that of the approaches, yards, remodel-

ling works, locomotive and rolling-stock servicing facilities, signalling, express building and other installations was \$14,750,000, so that the railway works cost \$17,000,000; it is being borne by the railways from proceeds of the \$15,000,000 City bond issue and additional funds provided by the railways, who are spending an additional \$5,000,000 on improvements to their individual properties.

The railways' share of the level crossing elimination and ancillary works is 15 per cent or over \$3,500,000, so that altogether they will have been responsible for more than \$25,000,000 towards the \$57,000,000 grand total of the city-wide scheme by the time all its works are completed.

### Railway Construction Works

The whole of the railway construction and remodelling works in connection with the new station were carried out under the supervision of Mr. C. J. Wallace, formerly Assistant Chief Engineer, Illinois Central Railroad, and now Terminal Operating Manager, New Orleans.

One of the difficulties encountered was the necessity for maintaining traffic operation by the railways using the old union station and its approaches during the construction of the new station and its approaches and the various other new works. For the old union station occupied the site where now a road-traffic circus faces and serves the new station.

The new station is a simply-arranged terminus in which departing passengers proceed directly from the main waiting concourse or hall to the six double-faced



*Part of the half-mile overpass showing the general design*



*The S. Broad Avenue overpass, constructed at a cost of \$3½ million, eliminates some of the worst rail-canal bottlenecks*

platforms without negotiating any stairs, and similarly arrivals pass from the platforms to the cab stands without passing through the station building and also on the level.

Every incoming train first runs into a spur line and is then backed into the station. This enables the train engine to be released immediately, and a shunting engine to take the now rear vans to the near-by mail and express buildings; it also reduces the average distance a passenger has to walk along the platform. Traffic movements in the neighbourhood of the station are controlled by seven signalboxes.

#### Passenger Amenities

The waiting hall or concourse runs the full 257-ft. length of the building, and doors along one side of it lead to the platforms, and those on the other to the ticket and other offices, refreshment, waiting and rest rooms and other facilities. Arranged throughout the waiting concourse is a large number of settees, and its walls are faced with Italian marble and four large mural panels; terrazzo flooring is provided and illumination is by a special form of diffused fluorescent lighting. At right angles to the concourse a wide lobby leads to the front of the building facing the landscaped traffic circus where formerly the old union station stood. The entire station is air-conditioned, and on what we should call the first floor—the American second floor—offices run the length of the building.

Each platform face accommodates up to 20 vehicles; 44 trains are scheduled to use the station daily. The three diesel shunting pilots are equipped with radio

teletype machines enabling their drivers to communicate with the signalmen.

The many level crossings throughout the city have been and are being replaced mainly by long overpasses and numerous underpasses. The overpasses take the form of long viaducts of ample width and generally spanning not only railway approach lines and yards but also streets.

Many of the viaducts are of considerable length, one being nearly half-a-mile long. The viaduct work is mainly in concrete and steel and the approaches are usually supported by concrete retaining walls. The underpasses are generally multi-span underbridges designed to pass heavy traffic in two or more lanes.

**GOODS STATIONS USED AS SIDINGS.**—The stations at Lindean, Palnure, and Sorbie in the Scottish Region of British Railways, have become unstaffed public sidings, dealing only with traffic (including livestock) in full truck loads; these sidings are under the charge of the stationmasters at Selkirk, Newton Stewart, and Wigtown, respectively. Sundry traffic in lots smaller than truck loads to and from the Lindean area is dealt with at Selkirk, and to and from the Palnure and Sorbie areas at Newton Stewart.

**BRITISH RAILWAYS INTERNATIONAL AMBULANCE COMPETITION.**—British Railways ambulance teams representing England and Scotland competed in York on September 14. Five teams from either country took part, one team on either side being composed entirely of women. The result was England 1843, Scotland 1826½. The highest marks of 396½ out of a total of 500 were gained by Camden Goods "A" team of the London Midland Region, Exmouth Junction, Southern Region, being second with 384½, and the Scottish women's team from Glasgow third with 378½. The competition was attended by Sir John Benstead, Deputy Chairman, British Transport Commission; Mr. J. W. Stafford, President, National Union of Railwaymen; and many railway officers. Mr. H. A. Short, Chief Regional Manager, North Eastern Region, presided. The shield and certificates were presented by Mrs. Short.



*New Union Station with one of the overpasses in background. Note the ruins of the old station in the road-traffic station approach circus*



## New Rolling Stock for East Africa

*British-built first class coaches in which extensive use is made of aluminium alloy*

**T**HE East African Railways & Harbours took delivery in July of the first two first class coaches, forming part of an order placed with the Metropolitan-Cammell Carriage & Wagon Co. Ltd., and seven more are due to arrive immediately. All of these should be in service by the end of September. The balance of 11 more carriages for the Kenya-Uganda Line and the 14 for the Central Line in Tanganyika should be in service by the end of this year.

### Use of Aluminium Alloy

Extensive use is made of aluminium alloy in the construction of the carriages. Each coach weighs some four tons less than a similar carriage constructed of steel in the conventional manner; thus a 10-coach train composed of the new stock will be lighter than one

made up of only nine steel carriages. The alloy is also highly resistant to corrosion, which has obvious advantages, particularly in Africa. Also its low modulus of elasticity enables a well-designed carriage to absorb three times as much shock loading as a steel coach of similar construction.

### Arrangement of Accommodation

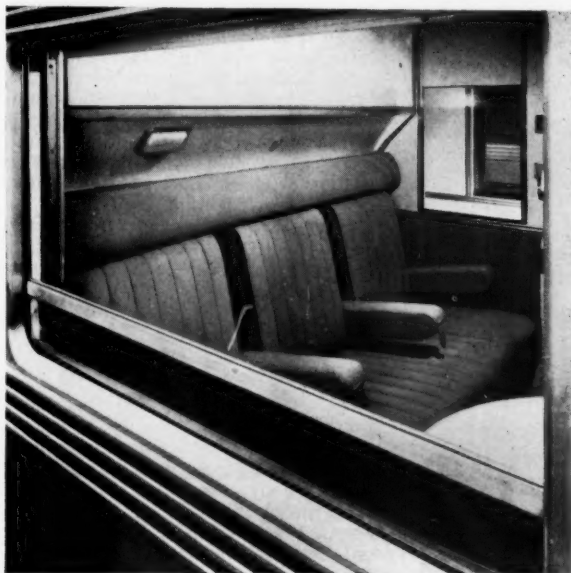
Sleeping accommodation is provided for 16 passengers, or day-time seating for 24, in double coupes with hinged communicating doors, access to all compartments being by way of a side corridor. Considerable attention has been paid to the interior decoration and furnishing. The compartments, corridors and vestibules are lined with plastic panels.

In the coupes, the upper and lower

berths, seat backs and arm rests are fitted with Dunlopillo cushions which are covered with a hard-wearing fawn coloured Bedford cord or blue leather. An electric fan and sterilised water for drinking are provided in each compartment and in the toilets. The wash-basin has a folding plastic-topped lid to serve as a table.

The floors are of lightweight type possessing sound-deadening qualities so important to the comfort of sleeping passengers. The entire flooring of the carriage, except in the toilets, is composed of high density cork and is covered with linoleum, with a pile carpet in each compartment.

The windows in the coupes and corridors are of the balanced falling type, 3 ft. 4 in. wide, fitted with clear armour plate glass.



(Left) Interior of the coupe compartment for day use, and, (right) compartment converted for four-berth sleeping accommodation with the communicating door opened

**BRITISH TRAVEL & HOLIDAYS ASSOCIATION, ANNUAL MEETING.**—In reviewing the 1953 tourist season at the annual general meeting of the British Travel & Holidays Association held in London on September 15, Mr. E. L. Taylor, Deputy Chairman of the Association, said the gross value of traffic was £126,000,000, and the total number of visitors 819,000. There is every indication that these figures will be exceeded in the current year; during the first seven months, January to July, 536,224 visitors came from overseas, an increase of seven per cent when compared with 1953. It might be increasingly difficult, said Mr. Taylor, to develop further our tourist traffic; the trend of increasing international traffic continued, and much

depended on costs, but if they could be reduced there was still a large potential, particularly in the off-season. Lord Jowitt, President, paid tribute to the work of Sir Alexander Maxwell, until recently Chairman of the British Travel & Holidays Association.

**MAIN LINE LOCOMOTIVES ON JAPANESE RAILWAYS MODIFIED.**—With the postwar progress of main-line electrification on the Japanese National Railways, the administration is carrying out the modification of heavy passenger and freight locomotives to enable them to operate on branch lines. Twenty "D 52" class and 43 "D 50" class 2-8-2 locomotives have been converted into 2-8-4 types and redesignated

"D 62" and "D 60" class, respectively; both are heavy freight engines. Of the heavy passenger engines, five "C 59" class 4-6-2 locomotives have been converted into 4-6-4 types and redesignated "C 60" class. More engine conversions are visualised. Maximum axleloads have been reduced by approximately 1·12 tons by the modifications.

**DIESEL OPERATION CONTEMPLATED ON NEW SPANISH LINE.**—It is reported that an American company has made a study of the Zamora-Orense line of the Spanish National Railways, now under construction, with a view to supplying 750-h.p. diesel-electric locomotives for operating over it.

## Prototype Bus for London Transport

*Of monocoque construction, the body serving as the main load-carrying unit*

A NEW type of double-deck bus to replace the existing 70-seater three-axle trolleybus has been evolved by the road transport engineers of the London Transport Executive. It is a two-axle vehicle of all-metal construction carrying 64 seated passengers with a loaded weight no greater than the 56-seater RT type bus. A prototype vehicle, developed and constructed in association with A.E.C. Limited and Park Royal Vehicles Limited, is being exhibited at the Commercial Vehicles Exhibition, Earls Court, London, S.W.5.

### Design Features

The vehicle is of monocoque construction, 27 ft. long by 8 ft. wide, with a wheelbase of 16 ft. 9 in. The estimated weight is 11 tons; to economise in weight, extensive use was made of light alloys, Fibreglass and foamed plastics for the seating, and so on.

The body structure serves as the load-carrying unit, with sub-frames to mount the mechanical units at front

and rear; the units are easily removable for repairs. Independent front suspension and a patented form of coil-spring rear suspension are used to obtain good riding characteristics. A special design of engine mounting prevents vibration. The gear selector pedal has been eliminated, direct-engagement of gears being electro-hydraulic, controlled by a column-mounted lever.

The body structure consists of rigid box structure formed by the under-frame, sides, roof, and front and rear bulkheads, fabricated from high-duty aluminium alloys. The front bulkhead carries the driver's cab, and front near-side units, front cowl and so on, while the rear platform and staircase are suspended from the upper saloon.

The underframe consists of rigid cross-members each fabricated from high-duty aluminium alloy in the form of an I beam, to which are bolted the lower saloon side pillars. The lower saloon bodyside is made up of H section extruded pillars with sheet stress panels from waist to skirt, riveted to the

inside flange of the pillar, and bolted between the cross-bearer and pillar; the waistrail and cantrail are simple channels riveted to the pillars in bay lengths, providing an anchorage for the panelling and window panes.

The exterior panels of aluminium sheet and are butt-jointed and blind riveted; the stress panelling is fitted internally to minimise replacement difficulties in the event of accidents. Floor bearers for the intermediate roof are similar to the main cross bearers, but not so deep, and form the anchorage of the upper saloon pillars, which are also of extruded alloy in H form.

The stress panels are fitted externally and butt-jointed, and an internal trim panel of aluminium is solid riveted to the framing. The waist and cantrail are of simple channel, and a similar member is fitted at intermediate floor level for securing the base of the upper saloon stress panels and the panel over the lower saloon windows.

The upper roof structure is of square-section alloy tube with riveted exterior panelling in alloy sheet, with aluminium sheet front and rear domes. The floors and ceilings are of alloy sheeting, and in corrugated form acts as a load carrying unit, and in sheet form provides ceilings, floor coverings, and so on.

The upper floor is laid in three flats instead of the orthodox radius. The rear platform framing is suspended from the upper saloon, and the end framing up to cantrail level is easily removable in case of accident.

### Mechanical Units

The engine, steering, and front suspension are carried on a sub-frame of two pressed, channel-section longitudinal members with cross-members. There are four body attachment points, large pins forming the main attachment, the two pins at the front bulkhead vertical, and those at the rear horizontal. Design is such that the body structure is easily removable for repairs to both the mechanical equipment and body structure.

The engine is the A.E.C. 9.6 litre direct-injection unit developing 125 b.h.p. at 1,800 r.p.m. Because of the absence of a conventional frame and leaf springs the engine can be mounted offset, the engine is slightly modified, but is basically the same as that at present used by London Transport. Transmission is through a fluid flywheel and independently mounted epicyclic gearbox. Brakes are operated by direct hydraulic pressure, eliminating the gear change pedal. Direct gear selection is by electro-hydraulic valves.

The electrical equipment includes four six-V. units carried in a light alloy cradle under the stairs, and direction indicators of arrow form at cantrail level.



*London Transport all-metal double-deck bus of monocoque construction*

## RAILWAY NEWS SECTION

## PERSONAL

Mr. R. M. L. Lemon, B.A. Hons. (Oxon.), Chief Establishment Officer, East African Railways & Harbours, has assumed the duties of Acting Chief Assistant to the General Manager in the absence of Mr. G. P. G. Mackay. Mr. Mackay recently left for Australia, where he is studying for the diploma in communication and transportation under the auspices of the United Nations Technical

licity, he joined the Underground Group of companies, and was engaged for a short time on publicity work, until he became an assistant in the office of Mr. Frank Pick, then Managing Director. He was Mr. Pick's Personal Assistant when the London Passenger Transport Board was formed and remained in that position until 1936. Mr. Valentine was then appointed Fares Officer of the Board in 1936, Commercial Officer in 1939 and Chief Supplies Officer in 1943.

awarded the Road Transport (Passenger) Medal in 1945.

Mr. John Hossack, B.Sc.Eng. (Glas.), A.M.I.C.E., Deputy Chief Engineer (Projects), Rhodesia Railways, who, as recorded in our September 3 issue, has retired, was born in Rosemarkie, Ross-shire, Scotland, in 1896. He was educated at Fortrose Academy and Royal Technical College, Glasgow, obtaining the Diploma of the



*Mr. A. B. B. Valentine*  
Appointed a Full-Time Member,  
British Transport Commission



*Mr. John Hossack*  
Deputy Chief Engineer,  
Rhodesia Railways, 1948-54

Assistance Administration. The courses will last some four months.

Mr. C. T. Henfrey, A.M.I.C.E., Way & Works Engineer, East African Railways & Harbours, has been appointed Chief Engineer of that system.

Mr. T. W. Brown, B.Sc.(Eng.), A.M.I.C.E., F.G.S., District Engineer, Aberdeen, Scottish Region, British Railways, has retired after 30 years of railway service.

Mr. A. B. B. Valentine, B.A.(Oxon.), M.Inst.T., whose appointment as a Full-Time Member of the British Transport Commission was recorded in our September 3 issue, was formerly a Member of the London Transport Executive. He was born in 1899 and educated at Highgate School and Oxford, where he was a scholar of Worcester College and where he took an Honours Degree in Classics in 1922. In 1928, after six years with the British Commercial Gas Association as Deputy Editor of Publications & Pub-

licity, he joined the Underground Group of companies, and later in that year, assumed the appointment of Operating Manager (Railways) in addition to his commercial duties. He was also a Member of the Railway Executive Committee from October, 1947, until the end of that year. When the London Transport Executive was set up in 1948 Mr. Valentine was appointed a full-time Member. Later in 1948 he was appointed a Member of the London Plan Working Party set up by the British Transport Commission, and was one of the signatories to the Working Party's Report published in 1949 which recommended extensive works of new tube construction and railway electrification in the London area. He was elected to the Council of the Institute of Transport in 1943 and served until 1946. He also served on the Executive Committee and on the Henry Spurrier Memorial Committee, of which he became Chairman during 1945-46. He was elected a Vice-President in 1948, and President for the year 1951-52. He was

Royal Technical College in Civil Engineering. During the 1914-18 war Mr. Hossack served in the Royal Navy. He entered the service of the Burma Railways in April, 1922, as Assistant Engineer, and, from the next year and until 1926, he was engaged on the construction of the Pyinmana-Taunggyingyi Railway. From 1928-29 he was Personal Assistant to the Deputy Chief Engineer, Construction, officiating as Bridge Engineer between 1931 and 1935. Mr. Hossack, who was mainly responsible for the introduction on Burma Railways in 1935 of the re-conditioning of crossings by electric welding, was confirmed District Engineer in 1937. In 1937 he attended the International Railway Congress in Paris as Way & Works representative. He was in 1941 seconded to the Burma-China Railway as Executive Engineer for the survey and construction of the Lashio Hsophtap extension via the Salween Valley, a distance of 116 miles through extremely heavy country. He was evacuated to India when the Japanese over-ran Burma in 1942, and until





**Mr. J. Bonham Carter**

Appointed District Operating Superintendent,  
Cambridge, Eastern Region



**Mr. T. R. Heaton**

District Goods Superintendent, Leeds,  
who is retiring



**Mr. P. R. Dashwood**

Appointed Assistant Estate Surveyor,  
Eastern Region, British Railways

1945 was on the planning staff at Simla, where he was engaged on preparation for the restoration of the heavily-damaged Burma Railways. In June, 1945, he was sent into Burma to make a general assessment of the extent of way and works damage, returning in the same year to that country with the Civil Government as Deputy Chief Engineer, Reconstruction. Mr. Hossack was in charge of the restoration in 1946 of the Myitnge Bridge. This construction was the subject of editorial reference in *The Railway Gazette* of June 20, 1947. He retired from Burma Railways in September, 1947. In August, 1948, he was appointed to Rhodesia Railways on short-term contract as Deputy Chief Engineer, Construction, and was responsible principally for the survey and preparation of project estimates for new lines, including the 50-mile deviation of the Dett-Wankie section and the reconnaissance, preliminary survey, and final location of the 200-mile Rhodesia portion of the south-east connection to Lourenco Marques. He was also responsible for the survey programme carried out in 1951-54 for the proposed 240-mile Sinoia-Kafue cut-off over the Zambesi Escarpments. On completion of contract, Mr. Hossack returned to the United Kingdom this month.

Mr. J. Bonham Carter, D.S.O., District Operating Superintendent, Norwich, Eastern Region, British Railways, who becomes District Operating Superintendent, Cambridge, Eastern Region, entered the service of the London & North Eastern Railway in September, 1936, as a Traffic Apprentice. In January, 1939, he was appointed Supernumerary Assistant Yardmaster at Carlisle, and, in July, 1939, Clerk, Chief General Manager's Office, Rates & Statistics, Kings Cross. He joined H.M. Forces in September, 1939, and served in the Royal Tank Regiment throughout the 1939-45 war, being awarded the D.S.O. and twice mentioned in Despatches. He also served for a period after the war in the Royal Engineers (Transportation) Supplementary Reserve. Mr. Bonham Carter resumed duty in March, 1946, as Assistant to the District Superintendent and District Locomotive Superintendent, Newcastle, to which position he was appointed in October, 1945, while still in the Forces. In September, 1946, he was

appointed Assistant District Passenger Manager, York, and, in January, 1948, he took over the position of Assistant District Goods Manager, Manchester, which he held until November, 1948, when he was appointed Assistant District Superintendent, Manchester. He became Assistant District Operating Superintendent (Eastern Area), London Midland Region, Nottingham, in March, 1950, and District Operating Superintendent, Norwich, in September, 1952.

Mr. Thomas Reginald Heaton, District Goods Superintendent, Leeds, North Eastern Region, British Railways, who is retiring on October 4, has spent most of his 43 years of railway service in the Midlands and Yorkshire. He joined the London & North Western Railway in 1911, and, after early training at Euston Headquarters and in Birmingham, he was appointed Assistant Superintendent, Garston Docks, in 1920. He came to Leeds in 1925 as Assistant to the District Goods Manager, and was later appointed Assistant District Goods Manager. He moved to Birmingham to a similar position in 1938, becoming Dock Superintendent, Holyhead, in 1942. After two years as District Goods Manager at Wolverhampton, he was transferred to Leeds in 1945, and was redesignated District Goods Superintendent in 1950 when the former L.N.E. and L.M.S. districts were combined. During the 1914-1918 war Mr. Heaton was commissioned as Lieutenant in the R.E., and, in 1918, he served in the Headquarters Docks Directorate under Sir Ralph Wedgwood.

Mr. J. Chappell, F.R.I.C.S., Assistant Estate Surveyor, Eastern Region, British Railways, who, as recorded in our September 17 issue, has retired, has completed almost 48 years of service. He began his railway career on December 31, 1906, in the Manchester Accounts Office of the Great Central Railway, and joined the Great Central Railway Estate Department, Manchester, in June, 1909. During the 1914-18 war Mr. Chappell served with H.M. Forces for four years, returning to Manchester after demobilisation, and, in January, 1927 he transferred to the Surveyor's Office, Southern Area, Liverpool Street, London & North Eastern Railway. He

later became Head of the Purchases, Sales, Parliamentary & Town Planning Section of that department, and, in 1945, was appointed Assistant Estate Surveyor, Southern Area, L.N.E.R., subsequently Eastern Region, British Railways, the position he held until his retirement.

Mr. P. R. Dashwood, Assistant to Estate Surveyor, Eastern Region, British Railways, who, as recorded in our September 17 issue, has been appointed Assistant Estate Surveyor, Eastern Region, was educated at Cranleigh School. He joined the Great Western Railway in 1935 in the Surveyors & Estate Department at Paddington, and was appointed a Special Trainee in that department in 1939. Mr. Dashwood served with the Transportation Branch of the Royal Engineers from 1939 to 1946, was mentioned in Despatches, and demobilised with the rank of Major after service with the B.E.F. in France, India and Assam, and Germany. Upon demobilisation he returned to the Headquarters of the Surveyors and Estate Department at Paddington and, in 1947, was transferred to the District Estate Office in Wolverhampton. In 1949, Mr. Dashwood was appointed District Estate Agent, Newcastle-upon-Tyne, North Eastern Region, and, in 1951, Assistant to Estate Surveyor, Marylebone, Eastern Region, the position he now vacates. Mr. Dashwood has been in the Army Emergency Reserve since it was re-formed in 1948, and is at present a Major in the Transportation Staff Increment.

Mr. J. D. Atkins, Assistant District Traffic Superintendent, Redhill, Southern Region, British Railways, has been appointed Traffic Development Assistant, Commercial Superintendent's Office, Waterloo, with effect from September 9, 1954.

Mr. W. H. Vine, A.M.Inst.T., Chief of the London Commercial Service (Goods & Parcels), British Transport Commission, has been appointed District Goods Superintendent, Leeds, North Eastern Region, British Railways.

Mr. F. V. Spillard, Assistant District Traffic Superintendent, Southampton, Southern Region, British Railways, has been

appointed Assistant District Traffic Superintendent, Redhill, with effect from September 9, 1954.

Mr. S. E. Medhurst, Head of Section in the Office of the Superintendent of Operation, Southern Region, British Railways, has been appointed Personal Assistant to the Superintendent of Operation, with effect from September 16.

The London Midland Region of British Railways announces the following appointments:

Mr. C. Leckenby, Assistant to District Operating Superintendent, Rotherham, to be Assistant District Operating Superintendent, Stoke.

Mr. T. Davidson, Yardmaster, Lostock Hall, to be Stationmaster-Goods Agent, Ormskirk.

Mr. J. Cornes, Goods Agent, Macclesfield, to be Goods Agent, Longton.

Mr. G. F. Wix, Manager of the Railway Division of the Phosphor Bronze Co. Ltd., has been elected to the board of that company.

Sir Harold Roxbee Cox, B.Sc., Ph.D., D.I.C., M.I.Mech.E., F.R.Ae.S., F.Inst.F., has been elected a Director of the Brush Group Limited.

Major C. G. Traherne has joined the board of Guest Keen Iron & Steel Co. Ltd. The company is a subsidiary of the Guest Keen & Nettlefolds group.

Mr. C. W. Meader, Chief Engineer at the works of the British Aluminium Co., Ltd., Burntisland, is retiring at the end of this month because of ill-health.

We regret to record the death, on September 19 at the age of 64, of Mr. Frederick Grant, Q.C., independent Chairman of the British Iron and Steel Federation Executive Committee.

Mr. C. G. Tangye, M.I.Mech.E., has been elected Chairman of the Council of the British Internal Combustion Engine Research Association in succession to Mr. H. Norman G. Allen.

Sir Harry Pilkington, Chairman of the Federation of British Industries, has been elected Chairman of the Council of European Industrial Federations in succession to Monsieur Georges Villiers, President of the National Council of French Employers.

Mr. F. W. Lampard has been appointed Northern Manager of Silentbloc Limited and the Andre Rubber Co. Ltd. He will operate from the Huddersfield office of the two companies at 11, Cloth Hall Street. Mr. Lampard was formerly a Privileged Apprentice at Derby Carriage & Wagon Works, and, after service in India during the war, he served in the Experimental Section of Derby Works.

Mr. J. P. Ford, Chairman of the Institute of Export, left the United Kingdom by air on September 22 for a tour of Latin America. His object is to find ways of increasing trade between this country and the South American continent, particularly for power plant and capital engineering equipment. Mr. Ford is Managing Director of Associated British Oil Engines (Export) Limited, Brush Export Limited, and National Oil Engines (Export) Limited, the three companies responsible for the export sales of the Brush Group.

## Institution of Railway Signal Engineers Visit to Southern Region

### *Inspection of Streatham Junction and Gloucester Road boxes*

At the invitation of Mr. C. P. Hopkins, Chief Regional Manager, Southern Region, members of the Institution of Railway Signal Engineers on September 11 visited the Streatham Junction and Gloucester Road Junction signalboxes; the former box was described in our issue for October 17, 1952, and the latter in that for April 2, 1954. About 80 took part.

The party was led by the President, Mr. J. Holden Fraser, Chief Officer (Signal & Telecommunications) British Transport Commission, supported by Mr. E. G. Brentnall, Senior Vice-President; Messrs. R. Dell, F. Horler, T. S. Lascelles, Past Presidents; Messrs. W. Owen, D. G. Shipp, F. G. Hathaway, M. Le Sueur, and B. H. Grose, Members of Council; Mr. B. Reynolds, Hon. Treasurer, and Mr. P. Guyatt, Hon. Secretary, General Purposes Committee.

They were received by Mr. L. J. Boucher, Signal & Telecommunications Engineer, Southern Region, who was accompanied by Mr. A. W. Damon, Assistant Signal & Telecommunications Engineer, and Mr. C. F. Challis, New Works Assistant to Mr. Boucher.

The equipment is of the same general type at both places visited. At Streatham Junction there is a 79-lever power frame and at Gloucester road one with 131 levers; the latter has replaced a total of 235 levers in four signalboxes. It handles 7,400 trains a week. The opening of this box and the adjoining new 107-lever box at Norwood Junction leaves only one more stage in the programme for providing continuous colour light signalling from London to Brighton to be completed in May, 1955. The total route mileage so signalled will then be 65, and track mileage 205.

The visitors inspected the operating, relay, power supply, and switchgear rooms at either box, and were shown photographs and wiring diagrams.

Outside equipment such as point machines, apparatus cases, cable junction and terminal boxes, signals, and so on, were also shown with covers removed, both automatic and controlled signal locations being available. The junction and spur lines at Gloucester Road are particularly complicated, and the centralisation of their control in one box has greatly increased the smoothness of the traffic working. The new box at East Croydon is in process of completion and the party was permitted to see the wiring staff at work. Some apparatus in the relay room already was in service.

#### Colour Light Signalling Programme

This work, of which the third stage was completed on March 21 this year, was begun in 1949, and follows generally the lines proved to be so satisfactory before the last war. It includes over 500 condenser-fed track circuits, some 400 multiple-aspect signals, many disc type shunting signals, and 400 point machines; these last are worked at 120 V. from accumulators, mostly direct from the frames. Magazine type train describers are provided throughout. The signal structures are of improved design and are particularly neat and convenient for staff to work on. There are 22 lightweight signal bridges spanning four or five roads. Continuity

of power supply is guaranteed by a Waterloo-Waterloo ring main with feed from that point, and reverse feed at South Croydon. Details of all this apparatus were given in our earlier articles referred to.

Mr. Fraser presided at an informal luncheon subsequently held at Croydon. He expressed the thanks of the Institution members to Mr. Boucher and through him to Mr. Hopkins for the facilities afforded for seeing such interesting work, and complimented Mr. Boucher's staff on the arrangements for the visit, especially in such heavily-worked signalboxes. He also thanked Mr. Reynolds and Mr. Guyatt and his committee for the work done in preparing things from their side.

Mr. Boucher, in reply, expressed the pleasure it would afford him to convey the message to Mr. Hopkins. They in the Southern Region were very much pleased that the Institution had paid its visit to their Region.

There remained, he added, only one more stage to complete a signalling programme originally intended to cover five years. Unfortunately, capital investment restrictions had compelled them to lengthen the period a little, but next year would see the finish of the work on the Brighton main line. Seeing the old and new signalboxes at East Croydon gave them a measure of the progress involved. All the installation work had been done by Regional staff and of that also they were proud.

In 1926 they had made their first multiple-aspect colour-light installation. They had followed the same general lines since, but with improvements in details. Some had commented on the fact that they did not use B.S.I. symbols on their diagrams, but they were now going to do so. Others had remarked on the absence of wiring labels. They contrived to get on perfectly well without them.

The job recently opened was working excellently and they were most satisfied with it. He wished to add his own thanks to those expressed to Mr. Challis and other members of the staff for organising the proceedings so well.

**PROGRESS OF DETT-WANKIE DEVIATION, RHODESIA.**—Another section of the Dett-Wankie deviation of the Rhodesia Railways was opened on July 18, when the first train from the South entered Lukosi after travelling the 31 miles from Dett on the new line. The first section, extending for eight miles from Dett, was opened in June, 1953, since when the remaining 23 miles have been completed. It is technically incorrect, if convenient, to refer to the Dett-Wankie deviation, for an eight-mile line avoiding Wankie Station is included in the general scheme; this avoiding line will relieve congestion at Wankie and by-pass the steep gradient south of the existing yards. The whole deviation will almost double the capacity of this part of the trunk route from Bulawayo to the north, and allow trains of 1,300 tons of coal to be hauled through from Wankie to Bulawayo. The ruling gradient will be 1 in 120, compared with 1 in 60, and the number of curves between Dett and Wankie imposing a speed restriction will be reduced from 195 to seven.

## Amenities for Passengers at Victoria

### *New Travellers' Bar at Grosvenor Hotel*

The importance of the Grosvenor Hotel, at Victoria Station, London, the property of the British Transport Commission, in meeting the needs of travellers by Southern Region routes to and from the Continent, was a factor influencing the decision of Gordon Hotels Limited, by whom the hotel is managed, to instal the new Traveller's Bar, opened recently.

The part of the ground floor of the hotel which has been modernised, consists of the original smoking room and the small American bar. It was decided to take down as much of the wall between the two rooms as was possible and so provide more sitting out space adjacent to and within the bar itself.

A completely new bar has been provided, 28 ft. long, with walls faced in bleached oak veneer and the original panelling in the smoking room, dating from about 1860, has been bleached and polished to match the new woodwork.

The smoking room windows have been given a more contemporary treatment and primrose coloured Venetian blinds provided. Entirely new furniture has been designed for both rooms.

#### Travel Motif

In the bar itself, two murals by Bernard Myers have been incorporated illustrating in semi-abstract form the movement and variety of travel, whence the name "The Traveller's Bar."

To further the theme of travel, there is a colourful display of luggage labels in the bar counter top, set under glass.

The front of the bar is buttoned in hide of neutral shade, used also on the bar stools, the legs of which are in metal finished in grey, with yellow footrests.

#### Ventilation and Lighting

An extract form of ventilation is introduced into the ceiling, which also includes an egg-crate grille in plywood through which the general lighting is provided. The lighting box itself contains fluorescent tubes

which, besides throwing light downwards, illuminate the ceiling.

The new bar was designed by Mr. Gerald Lacoste, F.R.I.B.A.

The main contractors for the work were Bowyer & Co. Ltd., of Upper Norwood.

### Visitors' Day at Longmoor

The Permanent Way Institution and British Railways, Southern Region, Lecture & Debating Society were amongst organisations which received invitations to visit the Transportation Centre, Royal Engineers, at Longmoor Camp on September 18. Many members of these bodies availed themselves of the opportunity to see the work of the centre, which consists of: Headquarters, Transportation Centre; Headquarters, Army Emergency Reserve (Transportation and Movement Control); the Army Movement Control School; and the Railway Wing, Transportation Centre. The Centre undertakes the training of all Regular, National Service, and Army Emergency Reserve officers and men in the operation and maintenance of railways and in movement control.

Brigadier C. H. Barnett, M.Inst.T., Commandant, welcoming the visitors, briefly traced the history of Longmoor Camp since the first railway troops went to train there after their return from South Africa in 1903. He described the expansion of the Centre during the second world war, and outlined the functions of the transportation and movement control units of the Royal Engineers.

He went on to describe the scope of and facilities for training afforded by the Army Emergency Reserve, which provides many officers and men for both transportation and movements. Emphasising the close connection between the railways, whose staff includes so many serving and retired personnel of the A.E.R. He extended a

special welcome to the Permanent Way Institution as railwaymen of standing.

#### Links between R.E. and the Railways

As an illustration of the bonds between the Royal Engineers and the railway world he drew the attention of visitors to the Longmoor Garrison Church, in which there were many memorials, not only to officers and men of railway units of the Royal Engineers—many of them railwaymen—fallen in war, but also to men prominent in the railway world who had shown interest in and helped Longmoor, and the R.E. transportation and movement control units, in their several ways.

Brigadier Barnett stressed the variety and technical interest of what visitors had seen and would see at the Centre and hoped they would tell their friends, so that the work of the Centre, and more particularly of the A.E.R., might be made known to the younger men employed on the railways or in allied occupations, or who were interested in railway and transportation matters.

Visitors, who were entertained to luncheon and tea, were given a demonstration, amongst others, of semi-mechanical tracklaying adapted for a military railway. They were also shown colour light signalling, also so adapted; the control room of the Longmoor Military Railway; the Movement Control School; and many other railway operating and civil and mechanical engineering plant and installations.

**SWEDISH LLOYD WINTER SERVICES.**—The service between Tilbury and Gothenburg operated by Swedish Lloyd will be maintained during the winter season of 1954-55, generally with one sailing weekly in either direction. The ships working the service will be *ms. Saga*, ss. *Suecia*, and ss. *Britannia*. Boat trains are run by British Railways between London St. Pancras and Tilbury Riverside. Between Gothenburg and Stockholm, the special high-speed multiple-unit electric train of the Swedish State Railways, the "Londonpiln" ("London Arrow") runs in connection with the sailings.



*New Travellers' Bar at Grosvenor Hotel, Victoria Station, London, showing view from lounge into bar, with murals in background*



## Modernisation of Signalling at Birkenhead Woodside

Work is now well advanced on the construction of a new signalbox and on modernisation of the signalling arrangements at Birkenhead Woodside Station, London Midland Region. The existing semaphore signals are being retained, but track circuits are being provided in the platform lines. Depression bars are being installed ahead of the platform starting signals. Additional dwarf shunting signals and three emergency detonators are also being provided. Bells operated by treadles will give warning of approaching trains.

The whole of the layout and signals will be worked mechanically from the new box, which will have a 50-lever frame and a working floor of 29 ft. by 12 ft. 6 in. The building, of brick with a flat roof and a wide window to give maximum visibility, will be centrally heated and have cooking facilities. The work will cost some £18,000.

## Electric Locomotive Trial in France

On June 17 and 18 the French National Railways 4,000 h.p. prototype electric locomotive BB9004, which weighs only 80 tonnes, hauled a test train of 23 coaches weighing nearly 1,000 tonnes between Paris and Dijon, 196 miles, on approximately the same timings as the *Mistral*. This represents an average speed from start to stop of over 77 m.p.h., with a maximum speed of 87 m.p.h. This locomotive, of French design and construction, was built by the Société de Matériel de Traction Electrique (Schneider-Jeumont-S.W.). A description appeared in our September 4, 1953, issue.

One of the essential features of the specification submitted to the designers and builders of the four prototypes BB 9001-9004 was for a Bo-Bo electric locomotive which should be capable of hauling heavy express trains at the maximum service speed of 87 m.p.h. and of attaining an average speed of approximately 100 m.p.h. on trials, but have a total weight of only 80 tonnes. This standard of performance has already been achieved with the 2-D-2 9100 and CC 7100 classes of electric locomotives, but their total weights are respectively 140 and 107 tonnes.

This new type locomotive has achieved all that was hoped of it during its trials, of which the aim was to determine the degree of heat generated under such arduous conditions in the SW 4326 traction motors. The specification for these required that the maximum temperature of the armatures should not exceed 120° C. above that of the atmosphere. To this end they have a powerful system of forced ventilation. The highest temperature of an armature registered during the trial was 116° C. at the top of the Blaisy-Bas bank, the most difficult section of the run. The maximum power at the drawbar recorded was 4,600 h.p., a remarkable performance under such conditions for an electric locomotive of such light weight.

**NARROW MARGIN OF COAL STOCKS.**—After the Midland Regional Board for Industry had received in Birmingham, earlier this week, a report on coal supplies, the Chairman, Major C. R. Dibben, said that they faced the winter with a very narrow margin. There had been an increase in coal production, but consumption had risen. Stocks held by public utilities and industry were somewhat lower than last year, and undistributed stocks were considerably lower. The locomotive coal situation of British Railways is reported to be rather better than it was a year ago.

**EMERGENCY TRANSPORT MEASURES IN SOUTH AFRICA.**—Mr. B. J. Schoeman, Acting Minister of Transport, South Africa, announced a number of emergency measures affecting transport at the Nationalist Party Congress in Pretoria on September 16. These measures, which are understood to be aimed at relieving alleged congestion on the railways, include instructions to local road transport boards to issue unlimited transport certificates for twelve months, with proper consideration for the present road hauliers, for the carriage of specified goods. In the list are included livestock, coal and coke, diesel oil, unprocessed ore and minerals, and grain and its products. The scheme does not apply to haulage to and from ports. Representatives of commerce, industry, agriculture, the railways, and the National Transport Commission are to consider the recommendations of an ad hoc committee to be set up to examine the issues involved.

## Staff & Labour Matters

### Railway Wages

After the meeting on September 17 between representatives of the B.T.C. and of the N.U.R., the A.S.L.E.F., and the T.S.S.A., the following agreed statement was issued:—

"Representatives of the B.T.C. and the three railway unions met at Marylebone today. The Chairman of the Commission, Sir Brian Robertson, placed before the trade unions' representatives the proposals of the Commission for a settlement of the review of the wages and salaries structure and for completion of the agreement made at Christmas, 1953.

"The proposals were to the effect that:—(a) in respect of conciliation staff other than footplate grades agreement should be reached as regards the rate to be applied to the highest rated wages grade, an appropriate rate to be agreed for the top rate engine driver; (b) that the minimum rate provisionally agreed for the conciliation staff should apply; (c) that immediate negotiations should take place to resolve the position regarding the remaining wages grades between the highest and the lowest rated staff; and (d) that there should be a thorough review of the salaries structure, including the basis of classification, and that meantime the proposals put forward by the Commission for the salaried staff should be accepted.

"The representatives of the A.S.L.E.F. stated that they were still under instructions to proceed through the agreed negotiating machinery. They would report fully, however, to their executive committee the proceedings of this meeting.

"The representatives of the N.U.R. stated that they were prepared to accept the arrangements in respect of wages grades other than footplate staff, and to commence immediate discussions in respect of the intermediate grades. They would also give consideration to the proposals in respect of the salaried staff.

"The representatives of T.S.S.A. said they were prepared to accept the Commission's proposals so far as the salaried staff were concerned.

"A general discussion also took place on the question of the promotion of efficiency."

After the meeting, Sir Brian Robertson described the Commission offer as "a final attempt to reach a settlement at present." He said "this meeting afforded an opportunity for me to lay before the three unions at the same time the proposals of the Commission for a final resolution of the problem of reviewing the wages and salaries structure and completing the agreement made last December. We shall now wait to hear the result of the A.S.L.E.F. executive. I hope that executive will give serious consideration to the account of the position I gave their representatives at the table. I sincerely believe that our proposals represent a solution which is in the best interests of the industry and those who work in it."

### Increasing Railway Efficiency

On the question of efficiency Sir Brian Robertson said the B.T.C. representatives had always emphasised its importance, and he naturally expected that it would be brought into account when, as was hoped, agreement was reached.

The General Secretary of the T.S.S.A., Mr. W. J. P. Webber, said it was proposed that the Commission offer should be accepted as an interim settlement, and that immediately after there should be a



The 23-coach test train leaving the Gare de Lyon, Paris, hauled by prototype 4,000 h.p. Bo-Bo electric locomotive

thorough review of the whole of the salaries structure. The proposals meant an increase to a greater or lesser extent to all salaried grades. They would also mean the elimination of intermediate stages in the various grades. The maximum rate in the lowest paid grade would be increased by £6 a year and by £17 in the maximum of the highest-paid grade.

The General Secretary of the N.U.R., Mr. J. S. Campbell, said the N.U.R. had agreed to the proposals for higher-paid operating grades, other than footplate staff, but the position of 56 more grades had still to be negotiated, which would take some time.

#### Attitude of A.S.L.E.F.

The A.S.L.E.F. met on September 20 and 21 and decided that its claim should be referred to the negotiating machinery. After a prolonged meeting of the society's executive on September 21 it was decided not to join the N.U.R. and T.S.S.A. in further talks with representatives of the Commission.

The A.S.L.E.F. executive insists that its claim should be pursued through the recognised negotiating machinery and has asked for an early meeting of the Railway Staff National Council, the next stage in the machinery before reference to the Railway Staff National Tribunal.

It also feels that the new proposals made by the Chairman of the Commission are still inadequate so far as footplate grades are concerned. It is understood that the A.S.L.E.F. also rejected a request by the N.U.R. that the three railway unions should combine on the wages issue. The A.S.L.E.F. cannot see that any useful purpose would be served in a joint meeting at this stage, as the three unions are pursuing different lines.

A further meeting between representatives of the N.U.R. and of the Commis-

sion took place on September 21, when the Commission submitted for the union's consideration improved proposals for intermediate grades.

#### Engineers' Pay Claim

An indication of the probable attitude of engineering and shipbuilding employers to a revised wages structure for the industry was given by Mr. John Drake, Chairman of the Engineering & Allied Employers, West Riding Group, recently. He said that some sections of the community ignored the need of industry for re-equipment and maintenance, for money to meet taxation, and for reserves. They divided the gross profits by the number of workers and arrived at a figure of so much a week all round.

### Contracts & Tenders

The General Electric Co. Ltd. has received an order from the British Transport Commission for the complete electrical equipment for 32 four-car multiple-unit trains to operate on the forthcoming Southend and Chelmsford extensions of the Eastern Region Liverpool Street—Shenfield electrification. The equipment is designed for 1,500 V. d.c. Each train unit will consist of a driving trailer, motor coach, trailer and second driving trailer. The motor coaches will be powered by four axle-hung motors, with series-parallel control by underframe-mounted electro-pneumatic contactor equipment providing automatic acceleration with two full-field and one weak-field continuous running notches. Mechanical parts of the rolling stock will be built at the Eastleigh works of British Railways.

In general the electrical equipment will be similar to that designed and built by the

G.E.C. for the eight three-car sets which went into service on the Manchester-Sheffield-Glossop section of the Manchester-Sheffield electrification in June this year. The G.E.C. also supplied the electrical equipment for the first 1,500 V. d.c. passenger rolling stock in Great Britain, which began to operate on the Manchester South Junction & Altrincham line in 1931.

A contract for the construction of a combined railway and road bridge over the Ganges at Mokameh, near Patna, has been awarded to the Ganga Bridge Construction Co. Ltd. The contract is valued at approximately £3,500,000. The bridge will be about a mile long and have 13 400-ft. spans. Much of the high tensile steel to be used in the superstructure will be imported from Britain.

The Ganga Bridge Construction Co. Ltd. has been jointly formed and is controlled by the Braithwaite, Burn & Jessop Construction Co. Ltd. and the Hindustan Construction Co. Ltd. One of the constituents of the Braithwaite, Burn & Jessop Construction Co. Ltd. is Braithwaite & Co. (India) Ltd., an associate of Braithwaite & Co. Engineers Ltd.

It is reported that the Deutsche Innen- und Aussenhandel (Eastern Germany) has received an order from the Egyptian Republic Railways for 100 12-ton box wagons.

Jenbacherwerke, of Jenbach-Tirol, has in hand an order for 20 diesel-hydraulic locomotives with Voith transmission for the Austrian Federal Railways.

Maschinenfabrik Augsburg-Nürnberg A.G. has received an order for two 170 h.p. metre-gauge diesel railcars for the Tetuan-Ceuta Railway in Spanish Morocco. It has in hand an order for 11 triple-car multiple-unit suburban trains for the electrified Hamburg S-bahn; each train is composed of two motor coaches with a trailer between.

British Railways, Southern Region, have placed the following orders:—

J. W. Ellingham Limited, Dartford: Extension of platforms and ancillary works, Woolwich Dockyard

Aubrey Watson Limited, London, S.W.1: reconstruction, Sarre Bridge between Grove Ferry and Minster

A. E. Farr Limited, Westbury: reconstruction of station bridge, Yetminster

Demolition & Construction Co. Ltd., London, S.W.1: new substations, Streatham, Ewell East, Wandsworth Common, St. Helier and Mitcham Junction

British Railways, Western Region, have placed the following contracts:—

A. Jackaman & Son Ltd., Slough: reconstruction of Old Bath Road Bridge, Cheltenham (Leckhampton)

W. H. Streeter Limited, Tudor Road Works, Hampton, Middlesex: provision of a drying shed and office accommodation at Reading Signal & Telegraph Works

Matthew T. Shaw & Co. Ltd., Millwall, E.14: supply of steelwork for the reconstruction of bridges at Peterston and Pontrilas

Horseley Bridge & Thomas Piggott Limited, Tipton: supply of steelwork and pre-cast concrete skewbacks to cross girders for Fabian Street Bridge, Swansea

W. Richardson & Co. Ltd., Victoria Street, London, S.W.1: installation of an extension to the heating system at Reading Signal Works

### Inauguration of Sheffield-Manchester Electric Service



Group at Sheffield Victoria before the departure of the inaugural electrically-hauled train to Manchester London Road on September 14 (see our September 17 issue). Included are Sir Brian Robertson, Mr. J. W. Watkins, Mr. C. K. Bird, and the Lord Mayor of Sheffield

British Railways, North Eastern Region, have placed an order with R. M. Thompson Limited, Leeds, 2, for the erection of new signalbox, type "D," at Hambleton.

The Special Register Information Service, Export Services Branch, Board of Trade, reports a call for tenders by the Egyptian Republic Railways, as follows:—

	Closing date
42,200 gas-filled train lighting lamps .. .. .	September 29
400,000 wooden sleepers .. .. .	October 2
124,500,000 blank card tickets .. .. .	October 9
2,000,000 clips, bolts and nuts and 1,600,000 steel clips .. .. .	October 30
125,000 steel sleepers for rails 54 kg. and 300,000 steel sleepers for rails 47 kg. .. .. .	October 30
2,000 tons flat-bottom rails for switches and crossings .. .. .	November 22
20,000 tons flat-bottom rails 47 kg. .. .. .	November 22
100,000 steel fishplates type (A) and 160,000 type (D) .. .. .	November 24
100,000 screw-piles type (S) and 500,000 bolts and nuts No. 5 .. .. .	November 24

Local representation is essential. Tenderers must be on the appropriate official lists of approved suppliers to the Egyptian Republic Railways. Further details and specifications can be obtained from the Stores Department, Western Wing, Cairo Station by local agents of interested British firms.

The Director-General of Supplies & Disposals, New Delhi, is inviting tenders as follows:—

- 160 screw couplings, b.g.; 300 screw couplings, m.g.
- 118 vapour extractor cocks, I.P.R. wagons; 40 Evrit type blow-off cocks
- 75 brake beam hangers (b.g.); 90 brake beams (b.g.) complete
- 2,600 chains with cotter, for wagons; 1,000 chain cotters

Tenders are to be submitted to the Director-General of Industries & Supplies, Shahjahan Road, New Delhi, quoting references as under:—

- SRI/2538—E/IV
- SRI/16629—E/IV
- SRI/16576—E/II
- SRI/18781—E/IV

They will be received up to 10 a.m. on (a) September 28; (b) (c) October 8; (d) October 18. Forms of tender are only available for purchase in India from the Deputy Director-General (Supplies), Directorate General of Supplies & Disposals, New Delhi; Director of Supplies & Disposals, Bombay or Calcutta; Deputy Director of Supplies & Disposals, Madras. If the date for the receipt of tenders does not allow sufficient time for tenderers to obtain tender forms from India, they may submit their quotation to India in their own letter form or by telegram so long as all essential particulars are given and provided they simultaneously apply for tender forms and return them duly completed as quickly as possible on the basis of advance quotations already submitted.

A copy of the tender form can be examined at the above address on application to the "CDN" Branch of the India Store Department, 32-44, Edgware Road, London, W.2. The drawing can be seen at the offices of Hodges, Bennett & Company, 59-60, Petty France, London, S.W.1, from whom copies may be obtained at a fixed price per sheet.

## Notes and News

**Temporary Engineering Assistant Required.**—London Transport require temporary engineering assistant for assistant civil engineer (structures). See Official Notices on page 364.

**Vacancy for Locomotive Superintendent.**—Applications are invited for the post of locomotive superintendent, between 25 and 35 years of age, required by the Railway Department, Sierra Leone, to take charge of the running section of the traffic branch of the railway. See Official Notices on page 364.

**Vacancies for Assistant Traffic Superintendents.**—Applications are invited for the posts of assistant traffic superintendents required by the East African Railways & Harbours Administration, Commercial and Operating Departments, for tour of 40 to 48 months on temporary terms. See Official Notices on page 364.

**Vacancies in the Transport & Harbours Department, British Guiana.**—Applications are invited for the posts of civil engineer, port engineer, and mechanical engineer, which exist in the Transport & Harbours Department, British Guiana. Candidates for all three posts should be between 28 and 45 years of age. See Official Notices on page 364.

**Aldershot & District Traction Co. Ltd. Meeting.**—At the annual meeting of the Aldershot & District Traction Co. Ltd., recently, Mr. T. Robert Williams, the Chairman, said that revenue had increased by some £21,000 over that for the previous year. Mileage had risen by 81,000 and last year's figure of 47,500,000 passengers had increased by some 250,000. They were concerned at the unremunerative services which formed such a large proportion of operations. Some 49 per cent of routes, involving 36 per cent of total mileage, were run below cost. Mr. Williams paid

tribute to the assistance given in increasing the proportion of double-deck vehicles in the fleet by the Southern Region of British Railways by the lifting of Wrecchesham Bridge. Costs were such as to justify application to the Licensing Authorities for a further increase in fares, but they felt that this would not increase revenue. They had to rely on the Chancellor of the Exchequer for a big relief in fuel tax.

**Institute of Transport.**—Sir John Elliot, President of the Institute of Transport, was in the chair at a luncheon on Friday last to the Editors of the transport Press. He was supported by officers of the Institute and Members of the Council and after having thanked the press for the support given during his year of office and to the Institute generally, he introduced Sir Gilmour Jenkins, the President elect. Mr. B. W. C. Cooke, Editor of *The Railway Gazette*, thanked the President and Members of the Institute on behalf of the transport Press.

**Outstanding Run by Plymouth to Paddington Boat Special.**—An exceptionally good run by an ocean liner special train from Plymouth Docks to Paddington was made on September 14, when the 226½ miles were covered in 3 hr. 49 min., at an average speed of 59.4 m.p.h. Hauled by "Castle" Class engine No. 5069, *Isambard Kingdom Brunel*, with Driver Newcombe, Laird Depot, and consisting of six coaches totalling 204 tons, this train conveying passengers off the French Line ss. *Flandre* left Plymouth Docks at 7.56 p.m. and arrived at Paddington at 11.45, 28 min. ahead of schedule.

**Excursions to Blackpool and Morecambe Illuminations.**—British Railways, Scottish Region, are running day and week-end excursions by special direct trains to Blackpool and Morecambe during the period of the illuminations at these resorts. Stations of origin include Edinburgh

## Diesel Train Working in the West Riding



(Photo)

[N.E. Region Magazine]

One of the new British Railways two-car units working the 2.38 p.m. from Harrogate to Leeds Central, North Eastern Region



Princes Street, Ardrossan, Kilmarnock, (with connections from Ayr, Prestwick, and Troon), Edinburgh Waverley, Galashiels, and Hawick. For Glasgow Autumn holidaymakers there are weekend trips to either Blackpool or Morecambe.

**Engine Runs Over Man's Coat Tails.**—The wheels of a goods train engine passed over the tails of a man's overcoat as he lay between the platform and the rails at Harrogate Station. The man, aged 85, had become dizzy and fallen off the platform. He was only slightly injured.

**"Popular Carriage" Exhibition at Euston Extended.**—The success of the British Transport Commission "Popular Carriage" Exhibition at Euston has resulted in its extension to the end of the current year instead of closing on September 25, as planned. More than 30,000 persons already have visited the exhibition.

**Railway Queen Crowned.**—Mr. C. P. Hopkins, Chief Regional Manager, Southern Region, and Mr. J. S. Campbell, General Secretary, National Union of Railwaymen, as Joint Presidents of the Railway Queens Council, on September 11, at Belle Vue, Manchester, crowned the Railway Queen for 1955, Miss M. C. Long, of the Scottish Region.

**Passenger Services Withdrawn from Scottish Region Stations.**—The Scottish Region of British Railways announces that passenger train services have been withdrawn from the stations at Bellahouston (Glasgow), Airth (Stirlingshire), and Dairsie (Fife). Convenient road services connect Bellahouston with the main Glasgow terminal stations, Airth with Stirling, and Dairsie with Cupar. In the case of Bellahouston, parcels and other merchandise traffic by passenger

train are being dealt with at the Glasgow terminal stations and collected and delivered in the Bellahouston area by British Railways motor vehicles. Parcels and other merchandise traffic by passenger train continue to be dealt with at Airth and Dairsie Stations. The withdrawals do not affect freight train traffic.

**Long Welded Rails in Switzerland.**—In the article on the use of welded rails in Switzerland which appeared on page 273 of our issue of September 3, the degree of longitudinal movement of the two rails combined, mentioned in the last paragraph, should have read 18 cm.

**Vickers Limited: Interim Dividend.**—The board of Vickers Limited have announced that the interim ordinary dividend for 1954 will be maintained at the rate of 2½ per cent on the capital as doubled to £24,630,968 by a capitalisation issue. The dividend will be paid on October 19. The new 3,078,871 ordinary shares of £1 each will not rank for this dividend. The total dividend for 1953 was 15 per cent.

**Railway & Canal Historical Society.**—The objects of the Railway & Canal Historical Society, which has been founded recently, include fostering and raising the standard of original research into railway and canal history by means of meetings, discussions, correspondence, and the circulation of notes and papers; preparation of a bibliography of printed books; compilation of information contained in material held by country records offices, libraries, museums, and so on; issue of a periodical journal; and eventually the publication of original papers and tables of data. A Council has been formed under the Presidency of Mr. C. R. Clinker, and membership of the Society is open to all. The annual subscription is £1 ls. (15s. for those

under 21). Enquiries should be addressed to the Hon. Secretary, Mr. G. J. Biddle, 172, St. Hubert's Road, Great Harwood, Blackburn, enclosing stamped and addressed envelope.

**Camberwell Tube Extension Urged.**—Camberwell Borough Council has been recommended to ask the other Metropolitan boroughs to press for an extension of the Bakerloo Line tube from Elephant & Castle to Camberwell Green.

**Chamberlain Industries Tube Bending Equipment.**—Chamberlain Industries Limited, Staffa Works, London, E.10, has appointed Drummond Asquith (Sales) Limited, King Edward House, New Street, Birmingham, 2, as sole distributors in the United Kingdom of the production tube bending machinery which it designs and manufactures in conjunction with Walter P. Hill, Inc., of Detroit, Michigan, U.S.A.

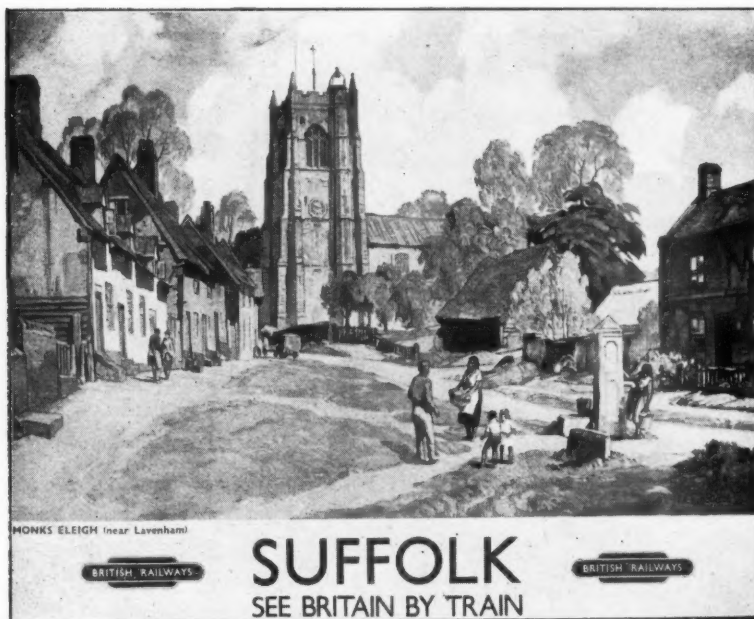
**United Kingdom Trade Commissioner Office in Bulawayo.**—The Board of Trade announces that a new Trade Commissioner Office will be opened in Bulawayo, Southern Rhodesia on October 1. Mr. J. Stafford, Assistant to the United Kingdom Trade Commissioner at Salisbury, Southern Rhodesia, will be in charge of the new office. The temporary address is c/o Mr. J. A. Clark, P.O. Box 1776, 516, Bradlow's Buildings, Abercorn Street, Bulawayo (Tel. No. 4168). There will not now be a United Kingdom Trade Correspondent at Bulawayo.

**University of Birmingham, Department of Extra-Mural Studies: Series of Meetings on Railway History.**—On Thursday, October 7, at 7 p.m. Mr. C. R. Clinker will commence a series of twenty meetings on Railway History. These will be held at the University of Birmingham, Edmund Street, and will be in two parts, Part I dealing with "Research, Sources and Bibliography," and Part II with "Railway History of the Midlands." This will be a much enlarged and more detailed examination of this subject than was possible last session. The fee for the course is 12s. 6d.

**Portable Sheet-Metal Cutting Machines.**—F. J. Edwards Limited has added to its range of portable electric hand sheet-metal cutting machines, which it is stated are capable of cutting cleanly and without burr. Various shapes can be cut, including small radius curves in either direction, and straight-through cuts. In most cases a fan-cooled motor is enclosed within the gripping handle. The range of hand tools comprises shears with capacities from 0.065 to 0.18 in. thick sheet-iron, including models with C-shaped blade carriers for trimming heavily shaped sheets and piping, and with cutting direction in line with or at right angles to the motor shaft axis.

**International Internal Combustion Engine Congress.**—At a meeting held in London on September 15 of representatives of the internal combustion engine and related industries, it was decided that the United Kingdom would, for the first time, be officially represented at future International Internal Combustion Engine Congresses. A British National Committee was formed consisting of representative organisations: British Internal Combustion Engine Manufacturers' Association, British Internal Combustion Engine Research Association, National Association of Marine Enginebuilders, National Forge-masters' Association, Locomotive Manufacturers' Association, and Diesel Engine

### Eastern Region Poster Publicity



A new poster produced by the Department of the Public Relations & Publicity Officer, British Railways, Eastern Region, from an original by Leonard Squirrell, R.W.S.R.E.

Users' Association. Inquiries should be addressed to the Secretary of the National Committee, c/o the British Internal Combustion Engine Manufacturers' Association, 6, Grafton Street, London, W.1. They should not be sent to the organisers at The Hague or to the Permanent Secretariat in Paris.

**Police Inquiries after Derailment.**—Detectives were called to Beddington Lane Halt, near Croydon, Southern Region, on Tuesday, after two wagons of a goods train had been derailed and pieces of a brick had been found in the point mechanism. It is believed that the brick had been placed there deliberately.

**Capitalisation of B.E.T. Co. Ltd. Reserves.**—The directors of the British Electric Traction Co. Ltd. announce that the company's application to the Capital Issues Committee for consent to the capitalisation of part of the company's reserves for distribution, in the form of fully-paid "A" deferred ordinary shares of 5s. each (subsequently to be converted into stock), to the holders of deferred and "A" deferred ordinary stock in the proportion of two such shares for every 5s. unit of stock held, has been granted. Resolutions to enable effect to be given to the proposals will be submitted to the members at an extraordinary general meeting.

**Powell Duffryn Limited.**—The total dividend on the £9,660,471 ordinary stock of Powell Duffryn Limited is being maintained at 8 per cent for the year ended March 31 last by the declaration of a second interim dividend of 5 per cent. This decision has been made because negotiations with the Socony-Vacuum Company of New York are delaying the annual meeting. Trading profits were £1,810,362, including other income and after deducting minority interests. This compared with £1,476,910 in the previous year. The 1953-54 accounts include £385,011 interim income under the Coal Nationalisation Act, part of which relates to other years. Group net profits were £777,395 (£556,883), and £2,409,536 (£2,208,285) was carried forward.

**Cruises to Largs and Millport Illuminations.**—In connection with Largs Illuminations today (September 24) there will be a special evening cruise from Rothesay at 7.10 p.m. by the British Railways vessel *Maid of Skelmorlie*. Two hours will be allowed ashore, the return from Largs being at 9.40 p.m. For Largs residents, the *Maid of Skelmorlie* will leave Largs Pier at 8 p.m. on this date for a cruise to view the illuminations, arriving back at the pier at 9.25 p.m. On September 25, there will be an evening cruise by the same vessel for Millport Illuminations, leaving Dunoon at 6.15 p.m.; Rothesay 7 p.m., and Largs at 7.35 p.m. The return departure from Millport (Old Pier) will be at 9 p.m.

**World Travel Conference.**—Representatives of travel organisations in more than 50 countries meet in London next week to discuss ways to facilitate international travel; they will be delegates to the Ninth General Assembly of the International Union of Official Travel Organisations, which is recognised by the United Nations. The assembly will be held at Church House, Westminster, on September 28-30. The assembly will be attended by representatives of the U.S.S.R. On returning for this conference to London, the I.U.O.T.O., which was founded in London

in 1945, will have as its host the British Travel & Holidays Association. Elimination of restrictions on travel such as passports, visas, and currency regulations, will be among the items discussed. Reports to be considered will include those of four travel commissions: the Asian & Far Eastern, the African, the Middle East, and the European.

**Crystal Palace High Level Line; Future Use of Land.**—The planning officers of South London boroughs affected are studying the possibility of redeveloping for housing and as open spaces the land occupied by the now closed Crystal Palace High Level branch of the Southern Region. The largest area of land released is at the Crystal Palace end, with its extensive station, now being demolished.

**World's Longest Funicular Railway for Venezuela.**—The Venezuelan Ministry of Public Works has announced that arrangements are well advanced for construction of a funicular railway to the top of Avila Peak (6,900 ft. above sea level). This railway, which will cost bolívares 5,000,000, will be the longest continuous funicular railway in the world, with an overall length of 11,000 ft., and an initial carrying capacity of 460 passengers an hour.

**New Vincent 75 c.c. Industrial Engine.**—Vincent Engineers (Stevenage) Limited, of Stevenage, Herts., is to manufacture a 75 c.c. engine for industrial applications. It has been designed and developed with the intention of providing a modern, small industrial power unit which shall be outstanding in performance but economical in price. The engine, which was introduced recently to representatives of industry and the Press in London, has one cylinder and develops 1.28 b.h.p. at 2,500 r.p.m. Its weight, including fuel tank, silencer, and mounting brackets is only 24 lb. The fuel consumption is one pint per b.h.p./hr.

**Lisbon Underground Railway.**—According to an official Portuguese announcement, the Empresa Metropolitana de Lisboa S.A.R.L., which holds the concession to construct an underground railway in the city of Lisbon, has been authorised by the Economic Council to issue debentures up to the value of esc. 150,000,000, with State guarantee. Several lines of this underground railway have been planned, and it is understood that the first line to be built will be that from Praça dos Restauradores to Praça Marques de Pombal, whence branch lines will link up with Entre Campos and Sete Rios, and finally with Luminar and Benfica. Subsequently other lines are planned to cross the city from west to east and to reach the nearer suburbs. The first phase of this project is to be started towards the end of this year and will be completed during 1957.

**Mackay Industrial Equipment.**—Exhibits by Mackay Industrial Equipment Limited at the forthcoming Public Works Exhibition at Olympia will include the Allis-Chambers H.D.9G tractor-shovel, fitted with a 2½-cu. yd. heaped capacity bucket and fitted with a General Motors four-cylinder two-stroke diesel engine giving a d.b.h.p. of 72. Clutch and steering gear are mechanically boosted, giving the tractor a turning radius of 14 ft. 7½ in. Also on view will be the Allis-Chambers H.D.20 tractor, the biggest in this range, developing a drawbar pull up to 65,000 lb. Another exhibit will be the Pescara-Muntz P.42 air compressor; this is a free-piston

engine in which the work done by opposed diesel pistons operating a two-stroke cycle is converted directly into compressed air, so eliminating the double conversion of reciprocating motion to rotary motion and vice versa in conventional compressors.

**Signalling of Proposed Melbourne Underground Line.**—The Victorian Government railways are to send a signalling engineer on a tour of Britain, Europe, and North America in the near future to study signalling methods and underground railway signalling. He is to report on the types of signalling suitable for the proposed Melbourne underground line, of which details appeared in our issue of August 13.

**English Electric Co. Ltd. Debenture Stock.**—The English Electric Co. Ltd. announces that a drawing of the 4 per cent debenture stock for redemption will take place on September 30. The amount to be drawn, in units of £100, is £31,100 (nominal) for redemption on November 15. To enable arrangements to be made for the drawing, no transfers of the 4 per cent debenture stock (redeemable 1951/68) will be acceptable for registration on September 29-30.

**Awards for London Midland Region Staff.**—Among the 23 members of the London Midland Region staff who are to receive from the Chief Regional Manager, Mr. J. W. Watkins, today (Friday) awards for going to the assistance of injured colleagues and passengers, are a guard, a driver, and a goods agent. In each case the prompt actions of the staff concerned in rendering first aid contributed greatly to the alleviation of pain and probably the saving of life.

**Conveyance of Transformers.**—For what is believed to be the first time in railway history, at least in Britain, two transformers have been hauled by one special train by British Railways, London Midland Region. The consignment travelled from the English Electric Co. Ltd., Stafford, early on September 19, to Rugby, where it will stand for 12 hr. The transformers are now reported to be at Willesden, whence they are to be worked this weekend over the Southern Region to Ore, near Hastings. The transformers weigh 81 tons each and are mounted on two new 135-ton wagons. Supervision by a travelling inspector is necessary throughout the journey. The maximum speed is 25 m.p.h., at some points it has been necessary to move the loads laterally to avoid fixed structures.

**Hackbridge Cable Holdings Annual Meeting.**—Mr. Claude I. Steen, Chairman of Hackbridge Cable Holdings Limited, has pointed out in his statement circulated with the company's accounts that the trading profit of the group was £295,250 and the net profit £111,857, compared with £157,307 last year. The dividend on the preference shares has already been paid, and on the ordinary shares an interim dividend of 7½ per cent, less tax, was paid in January, 1954. The directors now recommend a final dividend of 12½ per cent. This gives a balance of £49,982, which, with the balance brought forward, leaves £53,098 for retention in the group. Improvements to the means of production have been continued during the year at a cost of £64,700, in conformity with the board's policy of continuing to extend productive capacity and to modernise plant. Trading since the end of the year under review has continued to be satisfactory.

## OFFICIAL NOTICES

*The engagement of persons answering Situations Vacant advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.*

**QUANTITY SURVEYOR/ESTIMATOR** required. Permanent position with accommodation offered to suitably qualified man. Apply to The Eagle Construction Co., Ltd., Scunthorpe, Lincs.

**LONDON TRANSPORT** require temporary Engineering Assistant for Assistant Civil Engineer (Structures). Duties: design of new construction and repair work of steel and concrete bridges and structures and some site supervision. Applicants should be members of, or in course of qualifying for membership of, Inst. of Civil Engineers and should have good technical education and experience in drawing office and on sites. Salary £635 to £719 10s.; prospects of advancement to £783 10s. Medical exam. Applications to Staff Officer (F/EV.504) London Transport, 55, Broadway, S.W.1. For acknowledgement enclose addressed envelope.

**ASSISTANT TRAFFIC SUPERINTENDENTS** required by EAST AFRICAN RAILWAYS AND HARBOURS ADMINISTRATION. Commercial & Operating Depts., for tour 68/40/48 months on temporary terms at salary (including present temporary allowance of 35 per cent. of salary) according to experience, up to £1,530 a year with gratuity of 10 per cent. of salary. Outfit allowance up to £30. Free housing or allowance in lieu. Free passages. Liberal leave on full salary. Candidates, of good education, must have had sound practical administrative experience as Railway Traffic Officers. Write to the Crown Agents, 4, Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience and quote M3B/34138/RA.

**HER MAJESTY'S COLONIAL SERVICE.** Vacancy for Locomotive Superintendent, Railway Department, Sierra Leone. Duties are to take full charge of the running section of the Traffic Branch of the Railway. Appointment is pensionable on probation in the salary scale £1,362-£1,562 per annum gross. An outfit allowance of £60 is payable on first appointment. Free 1st class sea passages are provided for the officer, his wife, and up to 2 children under 10 years of age. Furnished quarters are provided if available at a rental of 10 per cent. of salary subject to a maximum of £150 per annum. Leave is granted at the rate of 7 days for each month of resident service. Candidates, between 25 and 35 years of age, must have passed or be exempt from parts A and B of the examination for A.M.I.Mech.E. He should have served an apprenticeship in mechanical engineering with the locomotive workshops of a Home Railway, or a locomotive building firm of repute, and had subsequent running shed experience on a Home Railway. He must have experience of outside running, a knowledge of carriage and wagon repairs. Have had drawing office experience and possess sound organising ability. Apply in writing to the Director of Recruitment, Colonial Office, Great Smith Street, London, S.W.1, giving briefly age, qualifications and experience. Mention the number (BCD.110/15/06/D15).

**HER MAJESTY'S COLONIAL SERVICE.** The following vacancies exist in the TRANSPORT AND HARBOURS DEPARTMENT, BRITISH GUIANA:—(a) **CIVIL ENGINEER** (BCD 119/30/04/D15). Duties include the construction and layout of passenger and goods stations and other buildings on a small railway; remodelling of existing yards and sidings; rehabilitation of existing structures in brick or timber; construction of timber pile wharves. Some railway and wharf experience is essential, and experience of level crossings and signalling desirable. (b) **PORT ENGINEER** (BCD 119/30/05/D15). Duties include the design, estimating, and construction and maintenance of warehouses, offices; of timber wharves in tidal estuaries; of four terminals for through loading ferry boats on two tidal estuaries, and the enlargement and repair of a small dry dock. Candidates must be experienced in port and estuary work. (c) **MECHANICAL ENGINEER** (BCD 119/30/06/D15). Duties include the erection, operation and maintenance of new locomotives, rolling-stock and cranes, the handling of machinery and responsibility for the workshops production, and maintenance of existing locomotives and rolling stock. Candidates with workshop and running experience preferred; experience in steam and diesel engines desirable. Candidates for all three posts should be between 28 and 45 years of age. For posts (a) and (b) they must hold a recognised University Degree or Diploma in Civil Engineering which carries exemption from, or have passed, Final Parts I and II of the A.M.I.C.E. examination plus at least two years approved practical experience. For post (c) they must hold a recognised University Degree or Diploma in Mechanical Engineering which carries exemption from Parts A and B of the A.M.I.Mech.E. examination, plus at least two years training in industrial mechanical engineering workshops. Appointments are on contract gratuity terms for two years resident service, with possibility of short extension, at a fixed salary, of £1,500 per annum plus gratuity of 22½ per cent. of basic salary payable at the end of each completed period of six months satisfactory service. For full details, apply in writing to The Director of Recruitment, Colonial Office, Great Smith Street, London, S.W.1, giving brief details of age, qualifications and experience, and quoting relevant reference number.

**RAILWAY MATERIAL.** Plain Sleepers, Chaired Sleepers, Rails of all Sections, Crossing Timbers. We undertake the supply and laying of all classes of siding installations.—The Railroad Plant Supplies Co. Ltd., 13 Waterloo Road, Wolverhampton. Telephone No. Wolverhampton 23617.

**BOUND VOLUMES.**—We can arrange for readers' copies to be bound in full cloth at a charge of 25s. per volume, post free. Send your copies to the SUBSCRIPTION DEPARTMENT, Tothill Press, Limited, 33, Tothill Street, London, S.W.1.

## Railway Stock Market

Profit-taking in some shares which had recently attracted strong speculative activity, and a more cautious attitude by buyers owing to an increasing tendency to await international developments, have been in evidence in stock markets. There was no heavy selling, and British Funds were inclined to strengthen further. In fact, the prevailing view is that the big rises in most leading industrial shares in recent months are justified on the reasonable possibility that further dividend increases may be in prospect next year.

Earnings of many companies are continuing their upward trend and in numerous instances the next results will reflect the end of E.P.L. New issues are tending to take a large amount of investment money, but the prevailing belief in the City is that the upward trend in markets is likely to continue. News is expected very shortly of the next issue of de-nationalised steel shares, and further issues are likely to be made soon by some well-known industrial companies. The outstanding success of Vickers' loan stock and share issues is an example of the big demand that exists for good class securities.

There was only moderate attention given to foreign and overseas rails. Main interest was in Dorada ordinary stock, which continued to attract speculative activity on talk of future take-over possibilities, but after rising, the price came back again to 80, though it later strengthened to 81. Antofagasta ordinary eased to 8½, but the preference stock was steady at 44. Nitrate Rails shares have been active around 19s. 9d. Mexican Central debentures showed steadiness at 72, but elsewhere, there was a little selling by tired holders of United of Havana, the second income stock easing to 35½ and the consolidated stock to 5½. There was activity up to 29½ in Chilean Northern 5 per cent debentures. Costa Rica ordinary stock was 11 and the 6½ per cent debentures 67½. Guayaquil & Quito 5 per cent bonds were 58½ and International Railways of Central America preferred stock was quoted at \$110. Taltal Railway shares have transferred around 13s. 6d. Paraguay Central income stock changed hands at 2; the 6 per cent debentures were 20½. San Paulo ordinary units were 3s. 6d.

Canadian Pacific changed hands around \$48½, while the 4 per cent preference stock was £68½ and the 4 per cent debentures £92½. White Pass at \$29½ reflected a little selling; the convertible debentures were £105, and the unsecured loan stock £33.

Midland of Western Australia was dealt in at 25, while 4½ per cent debentures were quoted at 92½ and the income debenture at 42. Nyasaland Railways 3½ per cent debentures held firm at 79½; the shares eased to 5s. 6d.

Road transport shares remained firmly held and, where changed, were inclined to strengthen further in price, buyers being in evidence on higher dividend hopes. Southdown was 37s. West Riding 35s. 6d. and Lancashire Transport 61s., while Ribble Motor was 37s. 6d., Trent Motor Traction 38s. 9d. and Devon General 32s. 6d. B.E.T.

"A" 5s. deferred units remained active, but at 62s. 3d. lost part of an earlier rise.

Engineering and kindred shares were more active, but movements were small and irregular owing to the rather uncertain tendency in markets generally. A feature was buying of Tube Investments on higher dividend hopes, and the shares rose to 74s. T. W. Ward at 55s. reflected further profit-taking after their recent rise, and elsewhere, Powell Duffryn have come down to 33s. 3d. following the results.

There was a good deal of activity in Babcock & Wilcox around 63s. 9d. Vickers were 39s. 7½d. with the premium on the loan stock at 27s. 6d. and the new shares, which are 10s. paid, changed hands around 22s. 9d. Guest Keen have shown steadiness at 62s. 3d. and British Oxygen were 63s. 6d. It is generally assumed that the next steel issue is likely to be shares in John Summers and that, like the other steel issues, they will be offered at a price showing a yield of over 7 per cent. Because of the backing of the big City finance houses the issue is bound to be a success, and it is felt that investors looking for an attractive yield should not overlook steel shares.

Among shares of locomotive builders and engineers, Beyer Peacock eased to 44s., Charles Roberts 5s. shares were 9s. 1½d., Hurst Nelson 42s. 6d., North British Locomotive 15s. and Birmingham Carriage 26s. 6d. Wagon Repairs 5s. shares were 13s. 3d., Gloucester Wagon 10s. shares 20s. 3d., and Vulcan Foundry 29s. 6d.

## Forthcoming Meetings

Until end of year.—"Popular Carriage" Exhibition (Two centuries of carriage design for road and rail in the Shareholders' Meeting Room, Euston Station, London, N.W.1. Weekdays 10 a.m. to 7 p.m.; Sundays 2 to 7 p.m.

September 30 (Thur).—University of London, Weekly Extension Lectures on "Our railway heritage: Studies in railway geography and history," at the Literary Institute, Stukeley Street, Drury Lane, London, W.C.2, at 6.30 p.m.

October 1 (Fri).—Railway Club, at 57, Fetter Lane, London, E.C.4, at 7 p.m. Paper entitled "The evolution of the block telegraph," by Mr. T. S. Lascelles.

October 1 (Fri).—Borough Polytechnic, Borough Road, London, S.E.1, at 7 p.m. First of 24 lectures on electric traction. Introduction by Mr. C. M. Cock, English Electric Co. Ltd.

October 2 (Sat).—Permanent Way Institution, London Section. Joint meeting with Irish Section in Ireland. Paper, illustrated by lantern slides on "Maintaining railways across the Fens," by Mr. R. F. Bonny.

October 5 (Tue).—Permanent Way Institution, Leeds & Bradford Section, in the British Railways Social & Recreational Club, Ellis Court, Leeds City North Station, at 7 p.m. Paper on "Some notes, mainly historical, on the Liverpool district," by Mr. G. F. Kent, District Engineer, Liverpool, British Railways, London Midland Region.

October 6 (Wed).—British Railways, Southern Region. Lecture & Debating Society, in the Chapter House, St. Thomas's Street, London Bridge, S.E.1, at 5.45 for 6 p.m. Opening address by Sir John Elliot.